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ABSTRACT

This volume contains appendixes of a report concerned with the conceptual exploration of the various activities of the U.S. Employment Service (ES) and the development of comprehensive measures of output and productivity. The nine appendixes are titled Bibliography by Topic and Annotated Selected References (23 pages of references noted in volume 1 and annotated selections on topics related to employment service activities); Site Visit Report--to ES State and Local Offices (27 pages); Conceptual Development: Labor Exchange and Enforcement Values (37 pages); The Impact of UI (unemployment insurance) Placements and Denials on Unemployment Compensation Payments (25 pages); Some Evidence on the Characteristics of Disqualified UI Claimants (23 pages); Employment Service Productivity Simulation System (ESPSS) User Documentation (28 pages); Estimation of Parameter Value Ranges for ES Productivity Simulations (16 pages); ES Productivity Estimates Based on Available Data: Empirical Results and Sensitivity to Uncertainty (43 pages); and Social Value Weights for ES Activities: Methodology, Incentives, Equity, and Policy Considerations. (21 pages). (SH)

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THE UNITED STATES EMPLOYMENT SERVICE:

A CONCEPTUAL MODEL OF OUTPUTS, VALUES, AND ILLUSTRATIVE ESTIMATIONS

VOLUME II: APPENDICES

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16. Abstracts
This study is a conceptual exploration of the various activities of the United States Employment Service and the development of comprehensive measures of output and productivity. Most final outputs of the ES are either labor exchange or enforcement activities. Illustrative measures and calculations suggest that the "social value" of the latter accounts for about 27 per cent of ES benefits, while the former about seventy-three per cent. Under moderate assumptions, it appears that the social return of the ES exceeds its annual costs. The report and appendices contain fairly extensive bibliographies and a literature survey.

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PREFACE

This document is part of a two-volume final report of a Boeing Computer Services, Inc. (BCS) study entitled "The United States Employment Service: A Conceptual Model of Outputs, Values, and Illustrative Estimations." Volume I of the report summarizes the work and findings under Contract 20-11-75-50 awarded to BCS on August 1, 1975 by the Office of Policy Evaluation and Research, Employment and Training Administration (formerly Manpower Administration), United States Department of Labor. Appendices are contained in Volume II. The Project Officer for the contract was Mr. William K. Showler, and Associate Project Officer was Mr. Irvin Wingeard.

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BIBLIOGRAPHY BY TOPIC AND ANNOTATED SELECTED REFERENCES

Part I of this Appendix consists of a list of all references contained in the Bibliography to Volume I by the following topics:

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- 2.0 ECONOMICS OF JOBSEARCH AND AND UNEMPLOYMENT
- 3.0 ECONOMICS OF THE EMPLOYMENT SERVICE
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- 4.0 PRODUCTIVITY THEORY
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Part II consists of brief summaries of selected references. These references were selected because they were particularly informative or useful in the present study effort.

APPENDIX A - PART I

1.0 General Manpower Economics

*Bain, Trevor. "Labor Market Analysis: A Review and Analysis of Manpower Research and Development", Center for Policy Research, Inc., New York, N.Y., Grant 21-36-74-19, Draft Report, June 1975.

*Borus, M. E., ed.; Evaluating the Impact of Manpower Programs, Proceedings of a Conference, June 15-17, 1971, Ohio State University, (Lexington, Mass: D.C. Heath, 1972).

*Borus, Michael E. and Wm. R. Tass; Measuring the Impact of Manpower Programs: A Primer, ILIR Policy Paper Series No. 17, November, 1970.

Bureau of National Affairs; Manpower Information Service (Bi-Weekly Review of Manpower Developments); various issues.

Center for Occupational and Professional Assessment, Educational Testing Service, "Results of Nationwide Job Analysis", Working Papers from a Job Analysis Study for DOL, Princeton, October 16, 1975.

*Giblin, E. J., et al.; Employer Services Activities and Manpower Policy, Michigan ES Commission, Detroit, August, 1972, DLMA 82-26-71-41-1, DL 82-26-71-41.

Hodge, R. W.; "Occupation in the U. S. 1925 - 1963", American Journal of Sociology, Volume 70, 1964: 286-302.

*Levitan, S. A., and Mangum, G. L.; Making Sure of Federal Manpower Policy, ILIR Policy Paper No. 2 issued jointly with national Manpower Policy Task Force, 1972.

Lumsden and Peterson, "The Effect of Right-to-Work Laws on Unionization in the United States", Journal of Political Economy 83(6): 1237-1248, 1975.

*MacRae, C. D., et al.; State Labor Market Research Study: An Econometric Analysis of the Effects of Labor Subsidies, Urban Institute, Washington, D. C., December, 1974.

*Mangum, G. L.; The Emergence of Manpower Policy, New York: Holt, Rinehart, 1969.

*Pechman, Joseph A. and Timpane, P. Michael, ed.; Work Incentives and Income Guarantees, the New Jersey Negative Income Tax Experiment, Brookings: Washington, D. C., 1975.

U. S. Department of Commerce, Bureau of the Census; Handbook for Manpower Planners, Parts 1 and 2 (USDC, Washington, D. C., 1974).

USDOL, Manpower Administration; CETA/SESA Guide, Washington, D. C., June, 1975.

*Van de Ven, A. H.; "A Framework for Organization Assessment", Pre-publication Draft, Department of Administrative Sciences, Graduate School of Business Administration, Kent State University, Kent, Ohio, April 25, 1975.

Yap, Lorene, Factors Affecting Income and Employment, Washington, D. C., The Urban Institute, March, 1972.

2.0 Economics of Job Search and Unemployment

Azariadis, C.; "Implicit Contracts and Underemployment Equilibria", Journal of Political Economy, 83(6), pp. 1183-1202, 1975.

Barron, J. M.; "Search in the Labor Market and the Duration of Unemployment: Some Empirical Evidence", American Economic Review, 65(5), December, 1975, pp. 934.

Bradshaw, T. F.; "Job Seeking Methods Used by Unemployed Workers", Monthly Labor Review, (February, 1973):35-40.

Felder, Henry E.; Job Search: An Empirical Analysis of the Search Behavior of Low Income Workers, Research Memorandum No. 25, Center for the Study of Welfare Policy, Stanford Research Institute, Menlo Park, California, May, 1975.

*Ferman, Louis A.; Job Development for the Hard to Employ, University of Michigan - Wayne State, Institute of Labor and Industrial Relations and West Virginia University Center for Appalachian Studies and Development, Policy Paper in Human Resources and Industrial Relations No. 11, January, 1969.

Fleisher, Belton; "The Effect of Unemployment on Juvenile Delinquency", Journal of Political Economy, December, 1963.

Gramm, Wendy L.; "Household Utility Maximization and the Working Wife", The American Economic Review, 65(1): 90-100, March, 1975.

*Gronau, Reuben; "Information and Frictional Unemployment", The American Economic Review 61, June, 1971: 290-301.

*Hasenfeld, Y.; Manpower Placement: Service Delivery for the Hard to Employ, ILIR Policy Paper Series, No. 21, May, 1973.

Hilaski, H. J.; "How Poverty Area Residents Search for Work", Monthly Labor Review, March, 1971: 41-45.

Jenkins, W. O.; "Measurement and Production of Criminal Behavior and Recidivism," (1972); "The Environmental Deprivation Scale (EDS): The Role of Environmental Factors in the Analysis and Prediction of Criminal Behavior and Recidivism", (1974). Several projects by the Experimental Manpower Laboratory for Corrections at the Rehabilitation Research Foundation, Montgomery, Alabama.

*Klitgaard, R. E.; "The Dual Labor Market and Manpower Policy", Monthly Labor Review, November, 1971: 45-48.

McCall, J. J.; "Economics of Information and Job Search", Quarterly Journal of Economics 84, February, 1970: 113-126.

McCall, J. J.; "Economics of Information and Job Search: Reply (to Peterson article on same, this issue)", Quarterly Journal of Economics 88, February, 1972: 132-134.

Peterson, R. L.; "Economics of Information and Job Search: Another View", Quarterly Journal of Economics 88, February, 1972: 127-131.

Phillips, L., Botey, H. L., Maxwell, D.; "Crime, Youth and the Labor Market", Journal of Political Economy, May/June, 1972.

Rea, S. A.; "Unemployment and the Supply of Labor", Journal of Human Resources 9(2): 279-289, Spring, 1974.

Rees, Albert; "An Overview of the Labor - Supply Results", Journal of Human Resources 9(2): 158-180, Spring, 1974.

*Sheppard and Belitsky; The Job Hunt: Job-Seeking Behavior of Unemployed Workers in a Local Economy.

Shiigi, A. I.; "Handbook for Developing Job Search Materials", (Second Draft) Prepared for USES, MA, USDOL, May 22, 1974.

Stigler, George J.; "The Economics of Information", The Journal of Political Economy 69(3): 213-225, June, 1961.

Stigler, George J.; "Information in the Labor Market", Journal of Political Economy 70(5) Supplement, Part 2: 94-105, October, 1962.

Toikka, Richard; "The Economics of Information: Labor Market Aspects", Reprinted Washington, D. C.: The Urban Institute, August, 1974, from Swedish Journal of Economics 76(1): 62-72, March, 1974.

Wachter, M. L.; "A Labor Supply Model for Secondary Workers", Review of Economics and Statistics: 141-151, May 1972.

3.0 Economics of the Employment Service

Austin, D. M., W. Postle, C. Quong; "Regional Management Information System Project (RMIS) Report on First-Year Activities, 10/1/74 - 9/30/75".

3.1 General

*Aller, Curtis C., D. Mayall, J. Mitchell, and D. Roberts; An Employment Service Research and Development Strategy. Report prepared under contract with USDOL by Center for Applied Manpower Research, University of California, Berkeley, March 21, 1975.

Bakke, E. W.; "The Role of the Employment Service", Employment Service Review, (January-February, 1964): 2-8.

***Blau** and Schoenherr; Structure of Organizations, (University of Chicago Press, Chicago, Illinois, 1967), Report of Comparative Organization Research Program, University of Chicago, Department of Sociology.

***Cohen**, M. S.; On the Feasibility of a Labor Market Information System, 3 Volumes, (Michigan University - Wayne State University, Institute of Labor and Industrial Relations, Ann Arbor, June 1974).

***Edwards**, F. E.; "Federal Legislation, Executive Orders, and Cooperative Arrangements Affecting the United States Employment Service, Manpower Administration and Affiliated State Agencies"; USDOL, M/A, Training and Employment Service Program Letter No. 2869, April 29, 1974.

Employment Service Task Force; "ES Task Force Report", Employment Service Review (January, 1966):3,56.

Englander Fred; "An Evaluation of the Allocation of Funds Among State Employment Service Agencies", New Jersey Department of Labor and Industry, Trenton, no date.

Foder; "The Federal-State Employment Service" (no date; references suggest 1971. Internal ES document).

***Frey**, Donald E.; A Methodology for Measuring the Impact of the United States Employment Service, Final Report under USDOL Contract No. J-9-M-6-0008, Wake Forest University, February, 1976.

Holt, C. C.; "Labor Market Improvement and Economic Trade-Offs", Working Paper under NSF: FF: OMR, DOL Contract 92-11-72-36, March 19, 1973.

Holt, C. C.; "The Potential Impact of the Employment Service on the Economy", Working Paper 350-59 under OMR, MA, DOL Contract 92-11-72-36, Washington, D. C. Urban Institute, October 3, 1973.

IBRC; "Validation of the Management Audit Survey Against Employment Service Criteria", Progress Report on Contract L-71-93 to Directorate of Audit and Investigation, OASA, USDOL.

IBRC; "Validation of the Management Audit Survey Against Employment Service Criteria", Working Paper 4 in Study for Directorate of Audit and Investigation, OASA. DOL, Salt Lake City: IBRC, February 13, 1976.

Keith, Ken; "Memorandum for Sam Kirabayashi", Trip Report, San Francisco, August 26-30, 1975, dated September 3, 1975. Concerns meetings on modification of ES MIS components.

***Klatzky**, S. R.; "Organizational Inequality: The Case of the Public Employment Agencies", American Journal of Sociology, 16(3): 474-491, November, 1970.

Kolberg, Wm. M.; "Memorandum for MA Executive Council", dated August 19, 1975. Contains list of current ES research and development projects.

Kuptzin, Harry; Summary of Outline on Approach Relating to Possible ES Oversight Hearings, Draft dated August 29, 1975 (OTS, OPER, DOL/MA).

Kuptzin, Harry; "Summary of November 6, 1975 Meeting of BPF Subcommittees on Adjustment for External Factors, Comparison Norms and Base Budget Data", Memo dated November 11, 1975 to Abe Stahler, USDOL, MA, ES.

*Mc Calley, et al.; Report on Employer Services Improvement Project in Illinois and Pennsylvania, Greenleigh Associates, New York, May 31, 1973.

Mark Battle Associates, Inc.; A Descriptive Model of the Employment Security Local Office, Prepared for DOL, MA, USES, Office of Placement Support and Development, Washington, D. C., September 30, 1975.

Meike, G. and J. Pyles, P. Kauffman, E. Horowitz; Measuring the Productivity of the State Employment Services, Draft Final Report (Contract Paper No. 6) Under USDOL Contract 20-51-75-47 to Analytic Systems/Applied Social Systems, Inc., no date.

*Newmore, A. L. and Mangum, G. L.; Reorienting the Federal State Employment Service, ILIR Policy Paper Series No. 8 (Issued jointly with the National Manpower Task Force), May, 1968.

*Review of Selected Important Research and Development Projects Relating to the Employment Service", Draft - no name, no date. Received from ES, August 20, 1975.

*Ruttenberg, S. H. and Gutchess, J.; The Federal-State Employment Service - A Critique (Baltimore: Johns Hopkins Press, 197?).

Scanlon, J. W., Buchanan, G., J. Nay, Wholey, J.; An Evaluation System to Support Planning, Allocation and Control in a Decentralized, Comprehensive Manpower Program, Contract 43-0-007-09 for USDOL, MA, OPER, March, 1971.

Scanlon, Holt, Fetter, Averill & Eagan; Training Session - Employment Service Modeling System, Urban Institute, Washington, D. C., February 20, 1976.

*Shelley, E. F. and Co., Inc.; Manpower Operations Data System (MODS), Functional Overview and Computer Operations, Prepared for MA, USDOL (Washington, D. C. Shelley, May, 1972).

*Siebert, Glenn A.; "Effectiveness Indicators for Employment Offices: A Systems Approach", Working Paper No. 221, Institute of Urban and Regional Development, University of California, Berkeley, September, 1973.

Technical Assistance Communications Center; "Data Collection Manual (for Site Evaluation)", no date.

*Thomas, R. L.; The Thomas Report on the United States Employment Service, (USDOL, Washington, D. C., August, 1958).

*U. S. Congress; "A Review of Labor Department Accounting Systems", Hearings before Subcommittee of the Committee on Government Operations, HR 90-2, June 26, 1968 (Washington, D. C. GPO, 1968).

*USDOL Manpower Administration Joint Evaluation Team; Phase III/Recommendations for Corrective Action for the Colorado Division of Employment. A report prepared in compliance with the terms of the plaintiff/defendant agreement in civil action no. C-3567, U. S. District Court for the District of Colorado, Denver, March 31, 1974.

*USDOL, Manpower Administration, Office of Administration and Management; Report Utilization Guide, Training Draft, excerpts for National Office Program/Financial Managers, May, 1975, Washington, D. C., January, 1975.

*USDOL, Manpower Administration, UI Service; "Significant Provisions of State Unemployment Insurance Laws, July 8, 1974", Ready Reference Sheet, 1 page, unpublished.

*USDOL, ETA, USES, Office of Employment Service Administration; "Proposed Resource Allocation Formula for Employment Service for Fiscal Year 1977 . . .", (USDL: Washington. D. C., February 17, 1976).

USDOL, Manpower Administration, USES; "Employment Service: Critical Issues and Approaches", Briefing given by ES Staff to Secretary of Labor Dunlop, June 20, 1975.

Van de Ven, Andrew; "1975 Organizational Assessment Measurement Glossary - Preliminary Draft", Working Paper on Contract to Study Wisconsin SESA under Contract to Chicago Regional Office of DOL, (Wharton: Philadelphia, November 3, 1975).

*Van de Ven, A. H., Treis, M. J., Emmett, D. C.; Performance Inter-Relationships in District Employment Security Offices in 1973 Organization Assessment, Madison, Wisconsin Department of Industry, Labor and Human Relations, Employment Security Division, July, 1974.

Van de Ven, et al; Organization and Performance of District Offices in 1973 Organization Assessment of Wisconsin Employment Security Division, Interim Report, Madison, Wisconsin Department of Industry, Labor and Human Relations, Employment Security Division, October 7, 1974.

3.2 Labor Exchange Activities

*Aller, Curtis C., R. K. First, D. Mayall, J. Mitchell and D. Roberts; Labor Market Variables Affecting Employment Service Productivity, (Part I: Policy Analysis; Part II: Technical Aspects) Report prepared under contract with DOL, Region IX, by Center for Applied Manpower Research, Berkeley, October 11, 1974.

*Benus, et al.; An Analysis of the Effectiveness of Counseling in the U. S. Employment Service, Phase I Report, Stanford Research Institute, October 31, 1975, Contract No. 20-06-75-48 to USDOL, MA, OPER.

Brown, Virgil; Missouri Employer Identification and Management Information System, (State of Missouri DES: Jefferson City, January, 1976).

*Camil Associates, Inc.; Review of Literature Relevant to the Study of Job Search Behavior and Employment Service Operations. Appendix A to Design Report on Survey of the Attitudes, Perceptions and Expectations of Users and Non-Users of the Employment Service. Report to USDOL, ORD, December 15, 1974.

Camil Associates, Inc.; Executive Summary: Recruitment, Job Search and the United States Employment Service, (Draft, October, 1975).

Center for State Employment Security; "Job Service Matching System, Local Office Organization Guide", September 1975.

Cohen, M. S.; A Study of On-Line Use of Job Information In Employment Service Local Offices, Draft final report prepared July 1975 for USDOL, MA, ORD under Research and Development Grant 21-26-74-21. Published by Institute of Labor and Industrial Relations (Wayne State University, Ann Arbor).

*Dickman, R. A.; "Computerized Matching: How? How Soon? How Much?" Conference Paper for the Federation for Community Planning Conference, Cleveland, Ohio, December 2, 1974.

Englander, Fred; "Estimating the Placement Potential of New Jersey's Employment Service Offices as a Basis for Evaluation", Division of Planning and Research, New Jersey Department of Labor and Industry, no date.

Fairchild, C.; "Effects of Unemployment of ES Placement Performance: Policy Implications:, Memo from E. F. Shelley Company to Abe Stahler, ES, January 10, 1975.

*Huber, G. P., et al; A Study of the Local Job Bank Program; University of Wisconsin Graduate School of Business Administration, Wisconsin University, Madison, August, 1972, DLMA 71-53-70-01.

Katz, A.; "Analysis of CES Boston Sample", Draft, April, 1975.

Katz, A.; "Measures of ES Influences on the Length of Unemployment: Conceptual Issues and Preliminary Findings", Working Paper draft under Grant 21-42-75-13 (DOL, MA, USES), September, 1975.

Katz, A.; "Pennsylvania ESARS/CWBH Comparisons: First Results", Working Paper draft. October, 1975.

Kuptzin, Harry; "Estimated Dollar Value of ES Placements in FY 1974 Based on Special Study of Actual Duration of Placements", Internal ES Discussion Draft, April 9, 1975.

*Lewis, M. V., et al.; Recruiting, Placing and Retaining the Hard to Employ, Pennsylvania State University - University Park, Institute for Research on Human Resources: University Park, October, 1971.

Mark Battle Associates and VOTEL Corporation; "Impact Analysis of the Effect of Computerization on Selected Employment Service Local Offices", Under Contract to USDOL, MH, USES, Office of Placement Support and Development, September 30, 1975.

Miller, G. S.; "Hunting for Work: U. S. Job Agency Finds It a Hard Job to Boost It's White-Collar Role", Wall Street Journal, Tuesday, May 11, 1976, pp. 1, 16.

*Mogull, R. G.; "Efficiency in a State Employment Office: A Linear Programming Application", Akron Business & Economic Review 2(3): 41-46, Fall, 1971.

*Moore, Basil; A Benefit Cost Analysis of the United States Employment Service, Internal Report, Program Evaluation Staff, U. S. Bureau of the Budget, November 1966.

*National Employer's Committee; The National Employer Committee's Report Concerning its Recommendations for the Improvement of the State Employment Services, The National Committee for the Improvement of the Employment Service, June, 1975.

Park, Sandi; "Possible Placement Predictors . . .", (Compendium of simple correlations between placements and other variables), Mimeo, Wisconsin SESA, January 22, 1976.

*Postle, Walter; "Notes on Employment Services Potential (ESP) Project", Memo to Region IX ES Task Force.

*Ramaker, J.; "Comments on the BPF for FY77", USDOL, MA, Region X memo to Assoc. MA for Field Direction (Washington, D. C.), July 20, 1975.

*Schiller, Bradley R.; "Job Search Media: Utilization and Effectiveness", Working Paper draft (no date) from: Job Patterns for WIN Terminees: A Comparative Study of Self-Placed and WIN-Placed Jobholders, Pacific Training and Technical Assistance Corporation, Berkeley, California.

Shelley, E. F. and Co., Inc.; "Actual vs. Predicted ES Productivity for FY74 and FY75: Meaning and Use of the Statistics", Memo dated February 27, 1975.

*Shelley, E. F. and Co., Inc.; Final Report on a Project to Develop Performance Standards for Job Placement and Support Services of the Public Employment Service, 4 Volumes, Prepared under Contract for the USDOL, MA, OPER, June 6, 1975.

*Special Review Panel on Computerization in the Employment Service; Report of the Panel, May 2, 1974.

*State of Washington, Employment Security Department; "Productivity Rating System", Washington State Employment Security Department Memo dated July 20, 1975, from Assistant ES Commissioner to all ES Staff.

*Ultrasystems, Inc.; Analysis of Los Angeles County Job Bank/ES Performance Data, Report under Contract No. 13-06-74-03 to USDOL, MA, March, 1975.

*USDOL, Manpower Administration, USES, Office of Employment Service Administration; Balanced Placement Formula . . . For FY1976, (USDL, MA: Washington, D. C., February, 1975).

USDOL, Manpower Administration, USES, Office of Placement Support and Development; Current Review of Computerized Matching Experiments, Staff Report, October, 1973.

USDOL, USES; "National Job Matching Experiments - An Overview", Internal Memo November 1974 - history and plan to July 1975.

United States Employment Service, OPSD; "Proposed Background and Work Statement and Budget . . .", Draft of RFP of May 16, 1975 for MBA Study to do Training Package. (Contains good history of matching.)

3.3 Enforcement Activities

Feldstein, Martin S.; "Unemployment Insurance: Time for Reform", Harvard Business Review: 51-61, March - April, 1975.

Holen, A. and Horowitz, S. A.; The Effect of Unemployment Insurance and Eligibility Enforcement on Unemployment, Public Research Institute - Center for Naval Analysis, Arlington, April, 1974.

*Scowcroft, Mary J.; A Longitudinal Study of Unemployment Insurance Exhaustees, Mathematica, Inc., Princeton, New Jersey, draft dated June 30, 1975, under Contracts No. 20-34-74-23 and 11-34-74-01 with USDOL, MA.

Scowcroft, Mary J. (2-083); A Study of Unemployment Insurance Exhaustees, Mathematica, Inc., Princeton, New Jersey.

*Stevens, D. W. and Austermann, V. C.; "Equity and Efficiency Considerations in the Employment/Unemployment Insurance Work Test: An Analysis of Local Office Administrative Practice". Final Report under USDOL/OPER Contract USDOL-L-73-119 to University of Missouri at Columbia, October, 1975.

*Thurow, L. C.; "Equity vs Efficiency in Law Enforcement", Public Policy 451-4621.

4.0 Productivity Theory

Joint Financial Management Improvement Program; Report on Federal Productivity, 2 Volumes, Washington, D. C.: GAO/OMB/Treasury/GSA/CSC, June 1974.

Office of Management and Budget, General Accounting Office, Civil Service Commission; Measuring and Enhancing Productivity in the Federal Sector, Report.

Powel, [illegible] H. and Lamson, R. D.; "An Improved Model for Determining the Input Cost of University Outputs", Journal of Socio-Economic Planning Sciences 6: 273-281, 1972.

Siegel, I. H.; "Measurement of Productivity", Paper for Conference on an Agenda for Economic Research on Productivity, April 6, 1973.

Steiner, P. O.; "The Public Sector and the Public Interest".

"The Measurement of Productivity", Survey of Current Business 52(5) Part 2, May 1972.

The Review of Income and Wealth 18(1), March, 1972, Articles by Dennison, Daily, Creamer, Rymes and Kendrick.

U. S. Congress; Committee on Government Operations (92-1), Federal Real and Personal Property Inventory Report (Civilian and Military) of the U. S. Government Covering its Properties Located in the United States, in the Territories, and Overseas as of June 30, 1970, (Washington, D. C. USGPO, May, 1971).

Walters, A. A.; "Production and Cost Functions: An Econometric Survey", Econometrica: 37(1-2) 1-4/63: 1+.

5.0 General Data Sources

The National Longitudinal Surveys Handbook, Center for Human Resources Research, College of Administrative Science, Oregon State University, October, 1975.

*USDOL, Manpower Administration; Manpower Report of the President, USGPO, Washington, D. C., April, 1975.

USDOL, Manpower Administration; Manpower Research and Development Projects, 1974 Edition, Manpower Administration, Washington, D. C., 1974.

*USDOL, Manpower Administration, Division of Program Evaluation Studies; Manpower Data Sources Handbook for Manpower Planning and Evaluation, USGPO, Washington, D. C., July, 1973.

6.0 Employment Service Data Sources

Contract Research Corporation; Location Handbook for Employment Service Local Offices, under Contract No. 20-25-75-02 for MA, USDOL, no date.

Katz, A.; "Analysis of CES Boston Sample", Draft, April, 1975.

Katz, A.; "Measures of ES Influences on the Length of Unemployment: Conceptual Issues and Preliminary Findings", Working Paper draft under Grant 21-42-75-13 (DOL, MA, USES), September, 1975.

Katz, A.; "Pennsylvania ESARS/CWBH Comparisons: First Results", Working Paper draft, October, 1975.

USDOL, Manpower Administration; State Activity Report Description - SESA A/C System, Manpower Administration, Washington, D. C., no date.

*USDOL, Manpower Administration; Summary of Employment Security Statistical Reports, May 1975, Washington, D. C., 1975.

USDOL, Manpower Administration, USES, Office of Employment Service Administration; Comptroller's Report Formats.

USDOL, Manpower Administration, USES; "Employment Service Performance Indicators, Third Quarter Fiscal Year 1975", Unpublished Tables (1-11), performance data by state and region.

*USDOL, Manpower Administration; ESARS Handbook, Chapter II, ESARS Glossary, Issuance No. 3, Washington, D. C., July 3, 1975.

USDOL, Manpower Administration, USES; ESARS Handbook, Chapter 4, Washington, D. C., May, 1974.

USDOL, Manpower Administration; ESARS Handbook, Chapter VII - Report Preparation, ESARS Issuance No. 2, Washington, D. C., July 1, 1975.

*USDOL, Manpower Administration, USES; Fiscal Letter No. 869, "Time Distribution Subsystem", Changes FY74 SAM Series No. 11 Memo.

Williams, T. J.; "Trends in Placements by ES for Selected Characteristics", Memo from Director, Office of MIS, to Burt Lewis, Associate Manpower Administrator for ES, August 1, 1975.

PART II

BRIEF SUMMARIES OF SELECTED REFERENCES*

Aller, Curtis C., D. Mayall, J. Mitchell, and D. Roberts; An Employment Service Research and Development Strategy.

Comprehensive review of ES from conflicting and unclear objectives to activities and organization. Proposes analytical framework for studying ES system. Reports on organizational and activity characteristics based on site visits. Calls for development of better data on both ES and environment, together with conceptually sound model of the market for ES services. Proposes an R & D program for ES based on two alternative objectives: efficiency and non-efficiency criteria. Review of research to date reported and new research needs identified for all aspects of ES management operation and evaluation. Research alternatives are combined to present ES with different options for emphasis.

Aller, Curtis C., R. K. First, D. Mayall, J. Mitchell and D. Roberts; Labor Market Variables Affecting Employment Service Productivity

Cross-sectional aggregate analysis of effects of various "external" variables on placement productivity. Omits discussion of bias, though probably not at great cost. No a priori model of factors affecting productivity is offered.

Bain, Trevor; "Labor Market Analysis, A Review and Analysis of Manpower Research and Development, Center for Policy Research, Inc., New York

Broad, but uneven, review of 10 years of manpower research related to labor markets, job search, labor market information, selection and entry, internal labor markets, and mobility. Discussion of simulated models in Chapter II includes reference to several operational labor market simulation models which may have practical value for budget forecasting. Very thorough review of job search method studies concentrating on effectiveness, but not cost-related. Labor market information Chapter IV covers both job information and more general topics, including roles of other market intermediaries.

Benus, et al; An Analysis of the Effectiveness of Counseling in the U. S. Employment Service, Phase I Report

This report covers the sample design phase of a study to examine the effects and outcomes of counseling activities performed by the ES on the behalf of its clients. Hypotheses to be tested and samples to be used are identified. Sample selection was based on the objective of minimizing confidence bands about estimates but national validity of the sample is not discussed. Nonetheless, results should contribute significantly to knowledge about the extent and determinants of indirect placements.

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* A complete Bibliography alphabetically by author is in Volume I and by topic in the first half of this Appendix.

Blau and Schoenherr; Structure of Organizations

This is the report of the Comparative Organization Research Program, University of Chicago, Department of Sociology. The project analyzed 53 employment security agencies and the 1,201 local offices that met the criteria for inclusion in the study. The purpose of this study was to determine the interrelationships between organizational practices achievements and structure. It was primarily of interest to the present project as a source of cross-sectional data on qualitative dimensions of ES agencies.

Borus, M. E., and W. R. Tass; Measuring the Impact of Manpower Programs: A Premier ILIR Policy Paper

Identifies three types of evaluations: (a) "Project monitoring", which compares project in action to some project model; (b) "Short-run goals evaluation", which measures immediate outcomes of program while in operation or shortly after (a common form: How many workers placed, etc.); and (c) Input Evaluation: phrased in terms of long-run goals and success at meeting them. The last is the focus of this volume. This approach is basically a cost-benefit analysis. This volume has some useful points relevant to analysis of ES.

Borus, M. E., ed.; Evaluating the Impact of Manpower Programs

Conference topics include design of evaluation systems, choice of control groups, design of survey instruments, measurement of non-economic and secondary labor market effects of manpower programs, interviewing and data sources. Of particular interest is the report by Sherwin Rosen, "Some Externalities In Program Evaluation," which analyzes some of the investment aspects of assisting those seeking work.

Camil Associates, Inc.; Review of Literature Relevant to the Study of Job Search Behavior and Employment Service Operations

An annotated bibliography organized by topic: role and mission of ES (historic), ES operations, job search findings, theories and models of exchange, and methods used in the study of job search and the ES. Quite comprehensive and recent enough to serve as a good introduction to "state-of-the-art" literature directly concerning ES.

Cohen, M. S.; On the Feasibility of a Labor Market Information System

Report on a labor market information system feasibility project. System is computerized, based on Michigan State "MICRO" information retrieval system. The information system is a comprehensive one for the Manpower Administration, including a wide variety of census and other data, a welfare model, a UI claims model and on-line access to ES records by remote terminal, with daily updating, for referral and placement. Last was demonstrated in the Denver YOC (see Chapter III).

Dickman, R. A.; "Computerized Matching: How? How Soon? How Much?"

Provides background material on the history of computerized matching and the different approaches taken. Points out several problems associated with obtaining an effective system.

Edwards, F. E.; "Federal Legislation, Executive Orders, and Cooperative Arrangements Affecting the United States Employment Service, Manpower Administration and Affiliated State Agencies"

Describes in exhaustive detail ES responsibilities mandated by 35 to 40 Acts and Executive Orders, plus "arrangements" with other agencies. Useful for determining precise ES legal obligations.

Ferman, Louis A.; Job Development for the Hard to Employ

Designed as training manual for administrators and line personnel responsible for specifying and evaluating forms of job development for the hard-core unemployed. Describes the basic elements of job development : structure and organization, administrative problems, dealing with employers and unions, etc.

Frey, Donald E.; A Methodology for Measuring the United States Employment Service

This report, in our judgment, contains the most comprehensive conceptual review of the ES as an economic entity. All major aspects of output are considered including labor exchange and enforcement and possible external affects in areas such as crime reduction. Models are proposed, testable hypothesis developed, and some data sources are identified but no empirical analysis is conducted.

Giblin, E. T., and L. L. Levine; Employer Services Activities and Manpower Policy

The report analyzes the neglect of employer services, in the era of special help to the disadvantaged. The result has been a decrease in the number and quality of job orders. The report discusses varying levels of employer services, from informal employer contacts in small rural offices to comprehensive employer relations teams in large metropolitan offices. The latter ultimately should be oriented to assistance in internal employer labor markets, as well as in job development activities.

Gronau, Reuben; "Information and Frictional Unemployment"

Develops Stigler's job search model by reformulating it in terms of multiple time intervals. Benefits and costs of search are defined in terms of market and non-market alternatives, direct and indirect costs. The mathematical problem is formulated to select, in each time period, the optimal wage demand and the optimal combination of direct and indirect search inputs. Results include deceleration of wage demands as search continues, and variability of the proportion of direct and indirect search inputs with the job seeker's current income and the unemployment rate. Integrates previous models by Stigler, Alchian, Mortensen, McCall.

Hasenfeld, Y.; *Manpower Placement: Service Delivery for the Hard to Employ*

Attempts to identify some of the key parameters that affect the operations of manpower placement services and proposes a new delivery system. (This is specifically concentrated on agencies dealing with the hard to employ and excludes others.)

Huber, G. P., *et al*; *A Study of the Local Job Bank Program*

This study had two basic purposes: (1) to determine the extent to which local Job Banks are achieving program goals, especially with respect to reducing frictional unemployment, improving service to disadvantaged, and more effective job matching; and, (2) to learn what Job Bank design configuration best meets these goals. The report also makes some very pointed comments about the responses to such assessments by administrators. The authors found that Job Banks are *not*: (1) achieving more efficient matching; (2) improving manpower services to disadvantaged; (3) reducing frictional unemployment; or (4) maintaining or increasing ES volume on overall activity measures.

Klatzky, S. R.; "Organizational Inequality: The Case of the Public Employment Agencies

An attempt to explain through statistical techniques the funding behavior (and revealed preferences) of USES. No model is offered. Statistical analysis begins with simple correlations and decomposes these to estimate "direct" (partial) effect of income per capita on funding ratio, controlling for partial effects of unemployment and UI insurance coverages. Statistical results are weak, and conclusions of "disproportionate" funding distribution are not well justified in terms of either logic or empirical analysis. Conclusion ignores overall incentives by implying states are willing to spend $10 on UI to make a $1 net gain in ES funding.

Klitgaard, R. E.; "The Dual Labor Market and Manpower Policy

Thoroughly analyzes the internal inconsistencies in the dual labor market theory. Seriously questions its usefulness in analyzing the labor market.

Lester, Richard A.; *Manpower Planning in a Free Society*

General approach to manpower planning, with particular emphasis on counseling and career planning for young people. Urges reform of ES in this direction. Chapter 7 describes cost-benefit analysis of manpower planning.

Levitan, S. A. and G. L. Mangum; *Making Sense of Federal Manpower Policy*

A valuable guide to understanding the development of the "manpower mess". Strongly recommends a Federal Manpower Agency as a means to centralize authority and rationalize the federal manpower system.

Lewis, M. V., *et al*; *Recruiting, Placing and Retaining the Hard to Employ*

A study of the concentrated Employment Program target population in Columbus, Ohio, in the late 1960's. Almost all of these surveyed and interviewed were black, most young males. The emphasis of the study was on the attitudes and experience of the target group. The authors found that the attitude set was generally *not* one of discouragement and alienation, although the target population had high unemployment. The primary concern was better than low-paying, dead-end jobs. Perception of CEP depended on its ability to provide "quality" employment. Job retention depended on (1) sex of participant, (2) on wage *increases* (high wages to start had low retention), and (3) on *direct* referral.

MacRae, C. D., *et al*, *State Labor Market Research Study: An Econometric Analysis of the Effects of Labor Subsidies*

Nine essays on the effects of labor subsidies, primarily concerned with their impact on labor supply. Topics include: labor markets, human capital, wage differentials, equilibrium and disequilibrium in the labor market, categorical earnings subsidies, analysis of participation in the AFDC Program by states, the personal income tax, and the social security payroll tax. .

Mc Calley, *et al*; *Report on Employer Services Improvement Project in Illinois and Pennsylvania*

This was both a research and demonstration project aimed at increasing employer use of ES. The authors found that the employer services unit acted as a liason between employers and the rest of ES and that all of ES had to be more oriented to employers. They took the view that employer complaints had to be viewed as serious, whether or not a specific complaint was valid or accurate. The project was conducted in four areas in each state. Ad hoc committees of employers were formed in each. In all but one of the eight localities there was an increase in employer use of ES, although the data presented were not very conclusive.

Mogull, R. D.; "Efficiency in a State Employment Office: A Linear Programming Application"

Demonstrates application of linear programming optimization technique where objective function is sum of (annual) salaries of placees. Constraints are ES personnel time, related to placee categories by "observed" data on cost per placement.

Moore, Basil; A Benefit Cost Analysis of the United States Employment Service

Part I - Brief discussion of economic rationale for ES: concludes there is no rationale (except possibly for low income groups) for direct placement activities on efficiency criteria, but indirect activities (information, job development) are justified. Also, distributional aims may justify direct placement activities.

Part II - Measurement and evaluation problems (e.g., displacement, environmental factors) discussed. Discussion of search and demand for placements. Inventive attempt at benefit-cost calculations, both average and marginal, using available data.

Part III - Comparative performance of State employment services. Uses position on regression line from cross-sectional placement regression to rate states.

Suffers from two errors: (1) ignores investment aspect of search (unemployment) in measure of benefits, and (2) ignores productive relationship between "indirect" and "direct" activities.

National Employer's Committee: The National Employer Committees' Report Concerning its Recommendations for the Improvement of the State Employment Services

Committee formed primarily to determine why employers don't make "full use" of ES. Basic reasons are given on page 4. (This is a second report - first report in 1972.) Primary recommendation: streamline the ES to a labor exchange which will provide qualified applicants to employers.

Nemore, A. L. and G. L. Mangum; Reorienting the Federal State Employment Service

A study of the impact of the Federal Manpower Programs of the 1960's on the ES at the state and local level, particularly with respect to the change in its goals and objectives. Also discusses the resource allocation process and service quality measurement.

Pechman, Joseph A. and P. Michael Timpane, ed.; Work Incentives and Income Guarantees, The New Jersey Negative Income Tax Experiment

Conference papers dealing with New Jersey and Pennsylvania negative income tax experiments. Findings of small, significant labor supply responses were challenged by some on the basis of extra-sample perturbations, but no counter evidence supporting a larger response was offered. Non-whites showed a puzzling increase in labor supply. Generally, there was a greater investment in durables and education but not in job search. Turnover was lower in the experimental group. Reductions in working hours were small - two to three hours per week - and did not lead to complete dropout from the labor force. Editors conclude that this finding "should moderate the pressure for a strict work test."

Postle, Walter; "Notes on Employment Service Potential (ESP) Project"

Description of project to establish performance standards for ES in Region IX. Want to determine "Job Placement Potential" as evaluation standard for local office performance. Outlines several possible models for determining placement potential and criteria for evaluating them. Proposes research plan. Also suggests that ES should concentrate efforts where it can be most effective in placements.

Ramaker, J.; "Comments on the BPF for FY77"

Comments generally favorable to BPF with some qualifications. Concerned that formula may drive some state employment services and/or local offices out of business, and that due allowance is not made for non-placement activities.

"Review of Selected Important Research and Development Projects Relating to the Employment Service"

Reviews current ES funded projects on job search behavior, ES role and objectives, administration and management, employer services; job information, inquiries pertaining to applicant services, labor market information. Most studies are also included in the CAMIL Annotated Bibliography.

Ruttenberg, S. A., and J Butchess; The Federal-State Employment Service - A Critique

Analysis and critique of the development of manpower programs through 1970 by former head of Manpower Administration (1965-1969). Includes a proposal for a new structure of the manpower administration. Tends to be a highly subjective view.

Schiller, Bradley R.; "Job Search Media: Utilization and Effectiveness"

Analysis of Census and WIN surveys of job seekers to determine patterns of search media utilization and effectiveness. Evidence is consistent with job search hypothesis of greater search with lower opportunity costs or higher benefits, though data may be biased by survey differences and the absence of quality and intensity data. Also, more extensive search by the WIN group (for whom WIN services are free) in all media suggest expansion effect overcomes substitution effect (of lower cost). Physical productivity of individual search time measured by dividing placements by the number of users. Ranking of media effectiveness is dramatically sensitive to manner of calculation: when all users are counted, public media are most productive; with "intensive" users only, public media appears less effective.

Scowcroft, Mary J.; A Longitudinal Study of Unemployment Insurance Exhaustees

A preliminary report of a study of UI benefit exhaustees and the impact of extended benefits. Distributional impact was found to be uneven, depending on whether household has other income (i.e., whether exhaustee is head of household). Net after-tax wage replacement ratios are high and determine the consumption adjustment. Search intensity does not appear to be affected, but the results are inconclusive. Due to low eligibility there is little replacement of UI benefits by other transfers after exhaustion.

Shelley, E. F. and Company, Inc; Final Report on a Project to Develop Performance Standards for Job Placement and Support Services of the Public Employment Service

Four volume study which establishes output and input standards for ES. Output standards take three forms: productivity (individuals placed per manyear); service to labor markets (individuals placed/unemployed); service to job market (openings filled/non-agricultural wage and salary employment). Emphasizes need to correct standards for local "external factors", such as nature of local industry and labor force, unemployment, economic growth, policy and legal constraints and available resources. This work was applied to the 1976 BPF input standards but was not as fully developed due to data limitations. Objective was the development of criteria for determining the most efficient resource allocation (based on activities) within ES offices. The ES office production process was closely examined and numerous production activities identified.

Shelley, E. F. and Company, Inc.; Manpower Operations Data System (MODS), Functional Overview and Computer Operations

Very detailed description of the Manpower Operations Data System developed for ES in 1971-1972 by E. F. Shelley and Company, Inc. System eliminates duplication of manual effort under old Job Bank/ESARS system by combining job bank and applicant data in a single input processor (MODS). MODS then passes statistical files to ESARS, and job bank file to Job Bank. Shows excellent source of sample data on service flows to applicants which could support study of input-output relationships, output intermediateness.

Sheppard and Belitsky; The Job Hunt: Job-Seeking Behavior of Unemployed Workers in a Local Economy

Did in-depth survey of job seeking behavior of 530 unemployed workers in Erie, Pennsylvania in 1963-1964. (Taken from files of ES office). Study is voluminous concentrating on socio-psychological aspects. Most interesting finding: those who started search earliest, canvassed most, and did not rely on "contacts" found work the quickest.

Siebert, Glenn A.; "Effectiveness Indicators for Employment Offices: A Systems Approach"

Complete, if general, description of ES production and environment. Economic treatment of benefits as marginal net present value is thorough but ignores investments aspect of search. Describes history of ES mandate through congressional action. General treatment of system flow considers intermediateness of some outputs. Empirical effectiveness measures suggested are not very clearly related to conceptual discussion. Most seem some what ad hoc. Rejects earnings as an output measure because earnings level may not be affected by ES.

Special Review Panel on Computerization in the Employment Service; Report of the Panel, May 2, 1974

Recommendations and conclusions of a special panel charged with reviewing the performance of four computerized job matching experiments. Found increased productivity and lower costs, but recommended further development to: (1) allow more sensitive evaluation of placement types affected; (2) consider impact on indirect activities; (3) ensure development of staff training techniques; (4) produce more rigorous test data; and (5) ensure appropriate level of computerization to different locations. Notes difficulty of distinguishing effect of computer matching from other computerization.

State of Washington, Employment Security Department; "Productivity Rating System"

Shows placements and manyears devoted to placement activity for FY75 for each office in State.

Stevens, D. W., and V. C. Austermann; "Equity and Efficiency Considerations in the Unemployment Insurance Work Tests: An Analysis of Local Office Administrative Practice"

This study examines the policy and equity implications of the full range of work test activities conducted as part of unemployment insurance regulations. The report examines the extent of variation and potential liability to denial of UI benefits. Using data from the St. Joseph, Missouri, area, the authors determined that there is significant variability in exposure to the various work test conditions and activities. The authors conclude that these variations appear to be unrelated to UI program purposes. Among the authors' conclusions is the observation that the present evaluation and reward procedures used by the employment service do not encourage providing a universal test of claimant willingness to accept available suitable work.

Thomas, R. L.; The Thomas Report on the United States Employment Service

An early study of the operational problems of ES. Concentrates primarily on the debilitating effects of the rapid proliferation of ES objectives in the post-war period.

Thurow, Lester C.; "Equity vs. Efficiency in Law Enforcement"

A thorough review of the conceptual trade-off between equity and efficiency in all enforcement activities. The author points out the interdependence between efficiency and equity goals and observes that specification of any efficiency criteria for enforcement has an associated equity goal, whether explicit or not. The article is particularly useful for suggesting the efficiency implications of different policy alternatives. A question which has particular relevance in evaluating enforcement activity of the ES is the attitude towards the criminal. "By committing a crime, does an individual stand outside of society and not merit equal treatment?" Since our approach has been to view the enforcement productivity from the point of view of a subset of society which excludes invalid claimants, this is an important policy question.

Ultrasystems, Inc.; Analysis of Los Angeles County Job Bank/ES Performance Data

Detailed analysis of the impact of computerized job banks in the Los Angeles area. Principal conclusion : that job banks led to net increase of job orders and placements.

U. S. Congress; "A Review of Labor Department Accounting Systems"

A description of the accounting systems developed in 1968 by Touche Ross for DOL under compunction from Congress. Includes a description of the ES accounting system, including effort reports used to split costs by function. Planned ESARS capability described, including cost allocations for fixed costs.

USDOL, Manpower Administration; Manpower Report of the President

Provides background on general labor market conditions, with special sections on several specific topics. Also has considerable labor market data for United States as a whole. Section of broad interest to this study: Chapter 5 and Special Reports on Veterans Services and CETA.

USDOL, Manpower Administration; Summary of Employment Security Statistical Reports

Summarizes statistical reporting forms and reports required by MA in Washington, D. C. Most are related to UI but some relate to ES.

USDOL, Manpower Administration, Division of Program Evaluation Studies; Manpower Data Sources Handbook for Manpower Planning and Evaluation

A selective listing and description of public and private data sources relevant to manpower planning and evaluation. Over 130 data sources are described in Section IV. Section III provides guidelines for manpower planners, especially in the data needs for various types of evaluation and planning.

USDOL, Manpower Administration Joint Evaluation Team; Phase III/Recommendations for Corrective Action for the Colorado Division of Employment

A report prepared in compliance with the terms of the plaintiff/defendant agreement in civil action No. C-3567, U. S. District Court for the District of Colorado, March 31, 1974. Recommends major restructuring of Colorado ES management system to guarantee service to target populations corresponding to most needy groups in local community. Effectively defines ES role as service to disadvantaged. Would require ES to make determination as to particular needs of particular population sub-groups.

USDOL, Manpower Administration, Office of Administration and Management; Report Utilization Guide

Flow charts and inventory of reports for SESA at all levels. Of particular interest to this project are the time distribution tables (03-cost center; 02-state level) and measures of activity (92-month; 95-year-to-date). Costs represent direct activity costs (from time distribution) plus allocated overhead plus imputed "unfunded" costs (leave, depreciation, space costs). Equivalent positions report (96) includes current month, quarter-to-date, and year-to-date direct and allocated paid equivalent positions.

USDOL, Manpower Administration, USES, Office of Employment Service Administration; Balanced Placement Formula . . . For FY1976. Staff Handbook

Describes the FY76 BPF and compares it to FY75. FY76 formula drops evaluation of Employment Assistance and Employer Services, concentrating on various aspects of placement. 60% weight is given to quantitative factors categorized as "productivity", "placement effectiveness", and "job-filling effectiveness". Qualitative factors include types of individuals placed and types of jobs filled. Details of all of these elements are fully described.

USDOL, EGA, USES, Office of ES Administration; "Proposed Resource Allocation Formula for Employment Service for Fiscal Year 1977 . . ."

This document is the proposed sequel to the balanced placement formula used for Fiscal Year 1977. Basically, the changes streamline the procedure somewhat. The redundant measures of penetration are eliminated, and a measure of the average wage in insured occupation, that is, the norm against which to compare wages of placed applicants, is included. However, the fundamental problem remains that placement counts are not weighted by their respective quality dimensions, but these dimensions are treated separately in the evaluation formula. Also, adjustment is made for labor market and other variables affecting productivity, which could create the danger of insulating less productive areas from appropriate resource allocations away from those areas.

USDOL, Manpower Administration, USES; ESARS Handbook, Chapter II, ESARS Glossary

Definitions of ES terminology, Chapter IV - Preparation of MODS Input forms: Guidelines for the preparation of 12 basic forms which are the inputs to MODS (Manpower OPUS Data System). Source for determining what is supposed to be in MODS (MODS has three subsystems: Applicant Data Systems (ADS), Job Bank System, and ESARS, ADS and JBs are inputs to ESARS.) Chapter VII - Report Preparation: Describes all of the component data elements in the various ESARS reports. Useful as a basic reference, especially for explicit definitions of data elements found in ESARS reports and files.

USDOL, Manpower Administration, USES; Fiscal Letter No. 869; "Time Distribution Subsystem"

Details the SESA time reporting system for ES and UI employees or of FY74. Useful primarily for data interpretation.

Van de Ven, A. H.; "A Framework for Organization Assessment"

Theoretical taxonomy of organizational structural discussions; distinguishes economic from organizational decisions.

Van de Ven, Andrew H., M. J. Treis, D. C. Emmett; Performance Inter-Relationships in District Employment Security Offices . . . and Organization and Performance of District Offices . . .

These two reports are part of a continuing study for the Wisconsin Employment Security Division. The first deals with performance interrelationships between numerous ES, UI and WIN functions, where performance is measured as employee time per function performed. Consists of numerous correlations such as "the greater the number of new applicants assessed per time spent in assessment, the fewer the number of placement transactions per position", etc. The objective of these correlations is to assess the impact of one activity on another in the hope of identifying some optimum activity mix. Work at this stage is admitted to be only exploratory. Second report consists of comparing the organizational characteristics of high and low performing UI, ES and WIN units. With respect to ES units, performance was defined as placements/position; high performance was related to such factors as staff not over-educated, more training given to new staff, positions less specialized, better intra-office coordination, more standardized work procedures and greater job satisfaction.

APPENDIX B: SITE VISIT REPORT

1.0 INTRODUCTION: SITE VISIT OBJECTIVES

One of our initial objectives has been to identify ES outputs and their relationship to one another. While outputs are discussed at some length in the literature, it was felt that an independent assessment should be made by the project team through site visits to ES state level and local offices. The purpose of these visits was partly to verify output descriptions in the literature and partly to expose team members to "live" ES operations. This appendix reports results of the of the site visits.

Objectives and findings of the site visits are summarized below. Specific findings with respect to activities and utilization by ES clients are discussed in more detail in Section 2.

In general, our intentions were to observe the ES activities and make first hand comparisons with descriptions found in the literature, determine the nature of output flows or intermediateness, and obtain some insights on the extent to which there are observable differences in nominally homogeneous services across client or beneficiary groups. In addition, we wished to observe different input mixes and the use of different factors of production used in the course of ES activity, in particular such things as Job Banks, computerized job banks, microfiche, and other forms of capital labor substitutions in the matching process. Specific objectives were:

(1) Observe directly activities and transactions related to intake, application, match, referral and job order development.

(2) Observe flow or "intermediateness" relationships between services, particularly employability development and referral.

(3) Observe capital-labor substitution: obtain some first hand understanding of the qualitative differences in output between manual and computerized job bank and job matching systems.

(4) Observe qualitative differences in output, service, or time associated with different levels of experience of ES personnel.

(5) Observe non-placement or non-labor exchange activities of the ES.

(6) Observe qualitative differences among the same nominal outputs or services provided to (a) job ready applicants, (b) UI claimants, (c) WIN applicants, (d) CETA applicants, (e) non-job ready candidates, (f) agricultural and non-agricultural applicants.

1.2 Site Selection Criteria

The current project was aimed primarily at conceptual development. We were not attempting a comrehensive onsite review of all ES activities, and the purpose of our visits was to get a "reality check" on services and outputs described in the literature. Given the available time and resources, we attempted to minimize as much as possible the amount of time spent in the field and the associated travel expenses. At the same time, we wanted to be assured that our observations give us some idea of the relevant range of variation in the character of ES services. Therefore, sites were selected on the basis of variations in pertinent criteria.

For this purpose, data from the USES Division of Cost and Data Analysis which describe various characteristics of state ES operations were analyzed. Specific dimensions examined were total applicants, WIN applicants, CETA applicants, and UI claimant applicants, for fiscal year 1975. Data on total placements, agricultural placements, and short-term placements were also examined. Finally, fiscal 1975 cumulative operating expenses by fund source were examined to get an idea of variations in the levels of services provided under these different funds. (The data examined are shown in appendix B-1).

Using these data, and beginning with the six states most readily accessible from BCS offices, states were selected which offer some interesting variations in the relative levels of these criteria. Table 1 below describes the states selected as well as the national ranges and averages for the indicators used. Selection of these states has resulted from an attempt to get at least one observation on either side of the national average for the indicators. Table 1 indicates a very good spread on most indicators can be obtained without going too far afield from project team locations (Seattle, District of Columbia) even though other states are not represented.

A team member visited at least two local offices in the assigned states in addition to the state headquarters. Individuals contacted are shown in appendix B-2.

TABLE 1

STATES SELECTED FOR SITE VISITS

	INDICATORS*						
	(1) % Non-Agr. Openings Filled	(2) % Short Term Placements	(3) UI as % all Placements	(4) UI as % all Applicants	(5) UI Placements as % of UI Appl.	(6) % Applcts Counseled	(7) % Non-Title III Funds
National Average	73%	32.7%	15.1%	30.3%	9.6%	5.9%	33%
Range	34.1-99.9	0.8-92.6	1.8-51.6	2.0-67.8	3.5-38.9	2.3-14.4	N.A.
STATES:							
California	34.8	35.0	22.0	20.3	25.3	2.8	77.3
District of Columbia	99.9	13.6	3.5	16.0	4.1	12.2	35.0
Idaho	79.8	24.4	13.0	15.9	21.4	5.9	85.9
Maryland	6[illegible].9	5.7	21.7	54.9	5.1	13.0	N.A.
Virginia	92.9	13.0	30.4	38.2	4.4	5.4	63.7
Washington	48.1	30.5	9.5	23.0	13.3	2.9	82.4
(Colo)		(66.4)					
(Ill)		(48.6)					

* SOURCE: Appendix Worksheet

** SOURCE: USES Comptroller's Office, F 1 1975 Obligation Reports; Total funds considered for calculation are: Title III, Food Stamps, WIN, CETA.

1.3 Site Visit Procedures

Our procedures at the headquarters were to introduce ourselves, describe the present project and determine (1) appropriate local office to visit and (2) headquarters personnel to interview with respect to both non-placement activities (information development, labor market information dissemination), and placement activities. Interviews at this level were used to get a general description of activities in the State. Local office visits followed the format shown in appendix B-3.

2.0 SITE VISIT FINDINGS: SUMMARY

2.1 Outputs

We found no reason to question definitions or the descriptions of outputs found in the literature. However, we would augment those descriptions qualitatively in two respects. First, the degree to which information is available for self service by ES clients is considerable and in some offices appears to be used extensively. Often, no records are kept of such usage, however. Second, the only qualitative differences in types of outputs distributed to different client groups such as WIN and CETA were in the types of intake forms used and the type of follow-up required. In terms of actual treatment, a more significant distinction between client groups appears to be that between job-ready and non job-ready applicants, in terms of the type of service provided. In general, we found that the client groups served by ES were typically unemployed, relatively naive about the job market and likely to be using other methods of jobsearch.

We did, however, find that measurement of outputs as represented in ESARS reports is cursory at best. One of the most startling findings was the lack of follow-up and verification of placements. Except for certain requirements under the WIN and CETA programs, follow-up is sporadic, and in some cases virtually nonexistent. Accordingly, it is difficult to place much faith in the durations of placements reported in ESARS. At the same time, many activities such as counseling or the job information service, and in some cases job development, may lead to placements which are not recorded at all.

2.2 Costs

Our main interest here was in observing problems which could arise in time allocation reporting by individual staff members, and observing the use of non-labor resources in the job match and file search processes. We found very little variation in the latter, with the exception that most offices use microfiche or printed job banks updated nightly, while a few larger offices tended to rely more on an online centralized system. The differences in these two approaches appear to us to translate mostly into differences in the quality of self-service information available to clients. In the case of time reporting by individuals, there appears to be relatively little room for subjective bias, since most staff people appeared to have specific responsibility for a small number of activities (one or two). Candid conversations with some officers revealed that bias is more likely to occur when "crunch" situations either in UI activities or in non-Title III funded activities put a drain on staff resources. These instances show up in time reports because of budget ceilings on position allocations in the non-Title III funded sources. Reference to such cases was, however, rare.

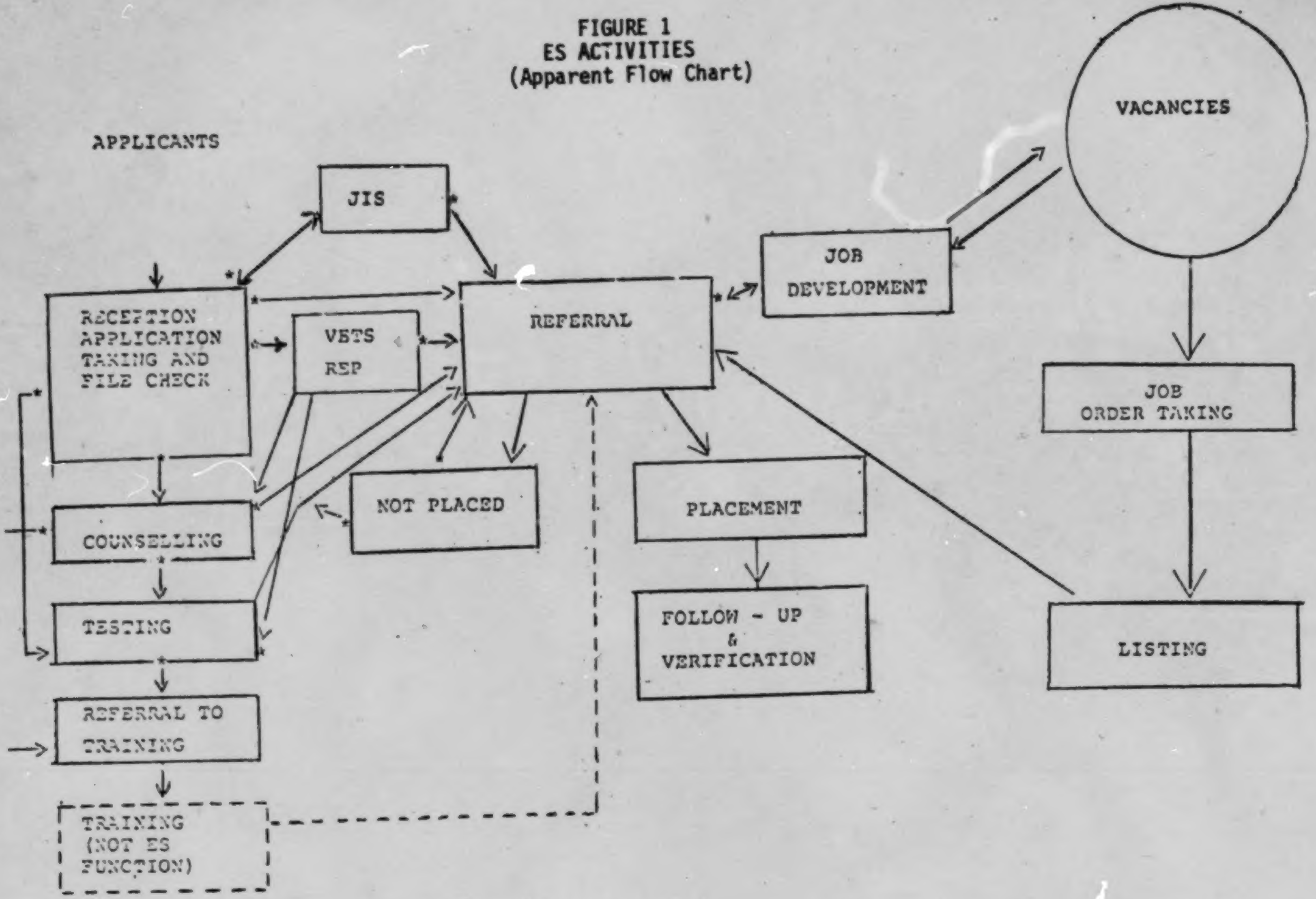
3.0 DISCUSSION OF FINDINGS

We approached the site visits with a prior concept of the activities, the process flows, and the ultimate outputs of the system which had been formulated based on several weeks of literature review. Figure 1 summarizes the concepts we had formulated. Since the purpose of the site visits was to test this prior view of ES activities against what we actually observed, we fully expected that the scheme depicted in Figure 1 would be modified. What we found, was that the general concepts and relationships depicted in Figure 1 for the most part seemed to be valid. On the other hand, the site visits made it possible to refine and specify in more detail the nature of each of the activities depicted in Figure 1. Also, we were able to obtain some idea of alternative production techniques on the basis of variations across sites in the way activities are carried out. Some activities, for example the basic intake and application process, were virtually the same in every site visited. Others, such as the extent and nature of counseling were highly variable.

Perhaps the single most important finding from the point of view of the present project was that, in one way or another, all the activities of the ES are directed toward enhancing the effectiveness of individual jobsearch. Wherever feasible, given an individual's skill, available training opportunities, and job market conditions, this objective translates into placement. Otherwise there appears to be a substantial role in educating the people to the realities of the job market, with the result that unproductive search or unrealistic search objectives are discouraged. Our overall impression is that the ES is a "people oriented" service, and that while employer services may be very vigorously pursued throughout the system, they are pursued in order to develop the opportunities for placing people in jobs. In other words, our impression is that the employer services and job development aspects of ES, as well as community relations activities, are intermediate to the ultimate placement objectives.

At the same time, measurement of even the simple placement outcome is not very reliable, at least in part due to the DOL restrictions on what may be credited to an office as placement. First, no placement credit is recorded when it results from a training program if the placement does not occur through an ES job order. Second, the same rule prohibits counting placements resulting from

FIGURE 1
ES ACTIVITIES
(Apparent Flow Chart)


APPLICANTS
JIS
VACANCIES
JOB DEVELOPMENT
RECEPTION APPLICATION TAKING AND FILE CHECK
VETS REP
REFERRAL
JOB ORDER TAKING
NOT PLACED
PLACEMENT
COUNSELLING
TESTING
FOLLOW - UP & VERIFICATION
LISTING
REFERRAL TO TRAINING
TRAINING (NOT ES FUNCTION)

* ——>: Indicates one of several options to be taken.

informal referrals of highly qualified job-ready applicants on the basis of ES staff contacts with employers rather than formal job orders. Also, no attempt is made to track the outcomes of self-service usage of ES facilities. Finally, distinction such as agricultural and non-agricultural placements are no longer as significant as in the past, given the changing nature of agricultural labor markets. Since the highly seasonal "day haul" labor employed by large agricultural operations is now handled primarily by farm labor contractors, the type of placement most commonly made by ES at these establishments is now more similar to an industrial placement, often involving skilled labor, particularly operatives and mechanics.

The following sections describe the basic activities which we observed, their flow, and the variations across sites.

3.1 Activities and the Flow of Clientele

3.1.1 Reception and Intake

The job applicant is introduced to the resources and services of the office. In particular, he is advised of the self-service Job Information Center and instructed in its use. He is asked to select whatever job and/or training opportunities possibily match his needs and capabilities and then to return for an interview.

3.1.2 The Job Information Center (JIC)

This is primarily a self-help service which all job seekers are asked to review first before seeing an interviewer. It consists of a listing or file with descriptions of actual job orders (excluding employer I.D.) and market background information which the applicant uses in effect to choose a possible referral for himself. Veterans preferences are usually listed separately. Included are the job bank which consists of a file of local and (usually) out of area jobs, sometimes in the form of a computer printout, sometimes in microfiche form, and other employment and jobsearch related materials such as transportation information. In some cases, community services are also posted or described in brochures. The outcome of exposure to the JIC is usually a return to the receptionist with one or more possible referrals selected by the applicant, although in some cases the individual may obtain enough information from the JIC to attempt a job interview on his own. This is discouraged by withholding employer names and addresses from posted orders in order to prevent employers being flooded by unqualified applicants.

In terms of Figure 1, it would be more appropriate to split off reception as a separate block, and insert the Job Information Center as a block in between reception and application-taking.

3.1.3 Interviewing

The interview process encompasses both application-taking and file checks and referral. A very consistent basic pattern seems to prevail in the interview process. First, if the individual has identified job or training opportunities from the self service Job Information Center, the interviewer will screen the individual against the job opportunity, and, if a match is appropriate will either refer the individual directly to the employer or to the appropriate training representative. In the case of CETA training opportunities where the ES is a subcontractor with another prime agency, there will usually be a CETA specialist on the staff. In the case of direct referral, a partial application form is filled out, although for CETA and WIN training referrals, full application forms are filled out.

If the individual is job-ready and in the opinion of the interviewer has marketable skills, but has found no available opportunity in the job information center, a full application card will be filled out, and the interviewer may double check the job bank local listings to see if anything has been missed. If nothing is found on checking the job bank, the interviewer may also try job development using his own employer contacts for particularly marketable candidates. If none of these checks results in a referral, the applicant's card goes into the applicant file under the appropriate occupational category. Within occupational categories, there is a priority sequence which usually puts veterans at the head of the file on a first-come first-served basis.

If the individual is not job-ready, or has skills which are simply not marketable in the current job market, the interviewer will either counsel the individual himself on employability development opportunities, career change possibilities, and other social services, or refer the individual to a counselor for the same purpose.

3.1.4 Counseling

The job applicant who needs assistance developing a vocational plan or overcoming problems that might prevent employment is usually referred to a counselor. Assistance is given in the development of a vocational plan or further steps are recommended to overcome employment related problems.

Counseling may be done by the initial interviewer himself, by an individual who specializes in counseling, or by counselors who specialize in particular categories. Most commonly, there are veterans employment representatives (VER) and minority employment representatives (MER). These specialists have the dual responsibility of counseling individuals having the special problems of the respective groups and also seeing to it that members of these groups get the priority due them under the law.

Counseling may lead individuals directly to training or to testing and evaluation. Counseling can thus be a highly variable activity depending on the needs of the individual, and can involve anything from matching individuals to training opportunities to educating them on market conditions, career plans, and utilization of available community services.

2.1.5 Training

Training is not an ES function. However, it may still lead to referrals and placement after the individual has completed training. Furthermore, there appear to be varying degrees of involvement of counselors in actually setting up and coordinating training programs.

3.1.6 Placement Follow-up

Follow-up is done by both interviewers and counselors. Follow-up takes place on an initial referral for job-ready applicants, on a 30 and 90 day basis for individuals who have been counseled in vocational or career planning involving training, and on a mandatory 30/90 day and one year basis for individuals referred to CETA training.

3.1.7 Job Development and Employer Services

These activities involve ES employees acively soliciting job openings, making employers aware of ES services, and encouraging them to "give ES a try", in order to generate job orders. The process is an ongoing one but can also arise during the referral process. Interviewers are usually categorized by broad occupational group and thus have a good feeling for their area of the market. In many cases they also have personal contacts among employers in the occupational categories assigned to them. As mentioned above, the interviewer may take advantage of these contacts in attempting to place a job-ready applicant for whom no specific listing has been found. In addition, most of the larger local offices have one or more Employer Services Representatives who spend much of their time visiting employers at their establishments. The purpose of these calls is to assist employers in assessing their worker needs and to provide them with information on ES.

The desirable outcome of job development is obtaining job orders. Job orders are usually taken by telephone and assigned the appropriate occupational code and a complete order form is filled out. When the job order is received, a file search is undertaken to attempt to identify appropriate applicants who might fill the job. Job orders may also arise without solicitation, but the procedure is usually the same.

3.1.8 File Check

In addition to checks by interviewers on behalf of applicants being served at the moment, a regular check of the live applicant file is conducted daily. Timing of the file check is usually determined by the manner in which job orders come in. In cases where the job bank is updated overnight, a file search is conducted usually in the morning and before job orders are posted in the Job Information Center. In cases where the job orders come in continuously by teletype, a file check is done as soon as the order is received.

3.1.9 Certification and Work Test

For both food stamp recipients and UI claimants, ES administers a work test, which comprises application for employment by the individual and referral by the ES interviewer. The work test consists of reporting by the interviewer as to whether the referral has been refused or a job offer subsequent to referral turned down by the individual. There appear to be variations across states in the extent to which registration by these individuals is required.

3.1.10 Special Programs

As a result of special legislative directives or court orders, ES is involved in various special programs. One of these is the outreach program which is the ES response to the Judge Richey court order on service to migrants. Basically, the ES is responsible for establishing personal contact with all minorities, offering the service to them, involving them in service or else receiving a signed waiver of the service by the individuals concerned. In addition, bilingual advertising us undertaken through local media. Most offices have approached the program with varying degrees of innovation. Some use mobile vans, some station individuals in proximity to the migrant camps and others send local office representatives to the field on a regular basis.

3.2 Variations in Activities across Sites

There were significant variations in most activities across the sites visited. Some activities such as the basic interview, and administration of work tests did not vary a great deal, while others such as counseling and composition of the job information service were much more variable. The following paragraphs identify the major variations found.

3.2.1 Reception and Intake

Basically, the functions outlined earlier as reception functions were performed at all sites. Variations were found in the staffing of the reception function. The Washington and Idaho offices for example, usually had a person identified as a receptionist, located in a prominent position near the entrance to the office. The Seattle office had what they called a "Lobby Monitor" who also provided an informal briefing on use of the Job Information Center and functions of the ES. In Washington and Idaho, the ES and UI offices were generally co-located, although only in the Idaho, job applicants were separated from the staff by a barrier such as a counter. In the California offices, reception was not staffed per se. Rotating duty was assigned to interviewers to handle inquiries at the counter. Written instructions were posted on the counter directing applicants to the JIC and instructions to fill out preliminary application forms which would then be put in a box or on a slotted block to be picked up by the responsible interviewer.

3.2.2 Job Information Center

Job Information Centers differed in content, timing of information posted and the manner in which information was delivered or displayed. Except in the Idaho offices, some form of self service job bank was usually present, although it did not always include the out of area job orders. In Washington, local job orders were posted as received while balance of state orders were updated nightly and printed on microfiche to be distributed to the local offices the next morning. In Idaho, job orders were not posted, but were held by the interviewers. This practice was reportedly followed because self-service led to employer complaints of unqualified applicants. Also, interviewers and counselors had files of only those out-of-area applicants. Neither the California nor Idaho offices used microfiche. The West Sacramento office used all updated job bank entries to conduct applicant file searches and call-in between 8 and 10 a.m., after which time unfilled job orders were posted.

Most of the offices had some form of occupational description materials, but there was a high degree of variability in the extensiveness of library materials. One of the most extensive was found in the San Francisco office which included many Government publications, some special California publications on occupational descriptions and a file of closed job orders which applicants could use to identify types of employers with occupations and to determine wage and salary trends. A separate library area supervised by a "librarian" was recently instituted in the Seattle office and is still under development. In addition to ES and other government publications, its materials include all area newspapers, descriptions of many local firms, and "how to" literature on applying for jobs, writing resumes, etc. In most offices, lists of social service agencies, including names to contact and phone numbers and addresses, were also available.

3.2.3 Interviewing

We found the least variation across sites in this activity. One unusual observation was the Seattle office, where all interviewers were CETA funded positions, while the base grant (Title III) funded positions were used as supervisors or specialists.

One comment which was heard at almost all sites from interviewers related to the requirement that all placements be based on a prior formal job order from the employer. The feeling among interviewers was that this requirement greatly restricts their ability to place marketable job-ready individuals for whom no specific job order happens to be applicable. Apparently, employers were often willing in the past to talk to such people on the recommendation of the interviewer and often a placement resulted. However, the job order requirement makes more red tape for the employer and makes it more difficult to place people in this informal manner. A second comment made by interviewers in local offices near large scale agricultural operations concerned the change in nature of agricultural placements in the last five to ten years. In the past, evidently, the ES placed a lot of what is called "day haul" labor, where migrants were ferried daily to harvesting jobs which last for the day and then were recontracted for the next day. According to personnel in those offices serving large-scale agricultural operations, this arrangement is now a thing of the past, because most unskilled farm labor is handled prior to the season through farm labor contractors. Contracts with the farmers and the laborers are made outside the ES system, and in many cases included provision of camps for the laborers. The type of agricultural placement made in such offices now is apparently much more similar to an industrial placement, involving skilled labor such as mechanics, equipment operators and foremen. Clearly, to the extent that good quality placements are obtained in this manner, imputation of lower priority to agricultural placement misses and distorts some valuable outputs of the offices involved.

3.2.4 Counseling

In general, the functions performed by counseling are the same across offices, but there is a great deal of variation in staffing and the extent of services provided. In several offices, no counselors, with the exception of an interviewer designated as a veteran's representative, were found. In other offices, several full time counselors, including both veterans and minority representatives, were available. In offices with full time counselors, there were also variations in the extent of service provided. One counselor interviewed was extensively involved in the establishment and coordination of training opportunities. In other cases, the counseling role was much less actively involved in the vocational preparation and training opportunities and consisted more of providing advice and informing the individual of the opportunities open to them. In almost all cases counselors either administered tests themselves or referred individuals for testing to other agencies. In general the tests were GATB, Kuder Preference and language proficiency tests.

Most of the offices appear to make an attempt to have some kind of counseling available. In offices where no counselors whatsoever were available, all interviewers were given complete lists of community services and instructed to make the information available wherever needed. Some offices managed to use non base-grant funding to fill the counseling positions. In Caldwell, for example, a WIN position was used as well as a graduate student intern. Our general conclusion with respect to counseling is that it is considered a valuable service by many offices, and while funding is not always available, the function seems to get performed some way or another. Evidently one problem with the current structure of the BPF is that placements often resulting from counseling and training referral are not fully credited to local offices. In our opinion, the importance of the function is underscored by the commitment of most local office managers to perform it whether they get credit for it or not.

3.2.5 Training

As mentioned above, there is much variation in the degrees of involvement of ES counselors in training activities. Training is not an ES function, but involvement of counselors in training varied from simply making information available to actually designing programs such as skill refresher courses. (This was done at the Boise office).

3.2.6 Follow-up

There were no significant differences in performing this function, although there seems to be concern about the accuracy and variations in actually confirming ES placements (Kansas City, for example).

3.2.7 Job Development and Employer Services

There were few variations in this function. One notable difference from the general pattern was found in the Olympia office, where the agency director had formed a business advisory council. A similar activity was undertaken by the director of the West Sacramento office who had become involved with the local Chamber of Commerce to keep local businesses involved in the ES and aware of its capabilities.

3.2.8 File Check

In virtually all cases, file check was conducted manually. However, the Kansas City area enjoyed the rapid turnaround of their computer access capability.

3.2.9 Work Tests

In general, these were uniform across the sites. One exception was the West Sacramento office, where the director had made an arrangement with the local county welfare (AFDC) office to place the welfare counselors in the ES office. These individuals, now charged by the Talmadge Amendments with monitoring the job search activity of welfare claimants, were placed in the office to provide much more job oriented counseling than they were able to provide from the welfare agency headquarters. Another major variation was in the extent to which UI claimant registration was mandatory. In California, registration was only required if the individual's skills were known to be marketable. Elsewhere, registration appeared to be more extensive.

3.2.10 Special Programs

All of the offices investigated were involved in some form of the migrant labor outreach program. There were extensive variations in the delivery mode adopted for contracting migrants. Some offices stationed individuals full time in satellite offices near the migrant camps, others used mobile van quarters, and still others combined comprehensive bilingual advertising with periodic visits to the camps by home office staff.

3.3 Search Behavior

As part of the site visit format (See Appendix 1), several questions were asked concerning the typical behavior of job applicants. The questions producing the most informative ("concensus") answers turned out to be the following:

1. Q: Are most of the applicants currently unemployed?

   A: Most users report that they are unemployed. But since many are searching with the goal of upgrading present jobs and may fear adverse reaction from their present employer or diminished commitment from ES if they already have a job, they may not report their present status truthfully.

2. Q: Do most of them use other sources of jobsearch information?

   A: Interviewers were unanimous in reporting that job applicants use other sources of jobsearch, in particular, friends, private agencies, civil service, unions, and want ads. In fact, interviewers usually encourage the use of all other techniques except private agencies.

3. Q: How extensive is the time required of job applicants in the use of the ES services?

   A: Applicant time is highly variable depending on the extent to which the applicant is job-ready. For the job-ready applicant, the time required is about 20 minutes, but if an individual needs counseling there could be a period of elapsed time of over 24 hours. Offices located near agricultural labor markets reported that this element is seasonally variable.

4. Q: How would you characterize the "market awareness" of these individuals?

   A: In general, the market awareness of job applicants was low. Skilled workers, and those with union affiliations seemed to be much more aware than others. The least aware of the market conditions appear to be those from out of state, particularly migrants. One individual felt that many of the job applicants were unemployed for the first time and as a consequence were quite naive about market conditions. Most counselors informed us that one of their most difficult problems was to help individuals adjust their expectations to more realistic levels. A frequent outcome of this process is that the seeker becomes discouraged and apparently leaves the work force.

5. Q: To what extent does self service activity result in placement outside the ES system?

   A: No offices had done any studies of the self-service activity and none could provide us any estimate of the amount of non-recorded placements generated. Typically, this situation is common only for offices located in smaller cities. These ES offices advised that it was probably significant because it is often very easy to identify an employer from the nature of job characteristics listed.

6. Q: What kind of applicant follow-up do you do on placements after the initial check to insure that a placement has in fact been made?

   A: Except for the verification follow-up described previously, no other follow-up of placements is carried out.

7. Q: Could the applicant file be used to determine the extent of job finding which is not recorded in placement counts?

   A: All offices were willing to cooperate in making applicant files available for sampling subsequent placement activity, but most expressed the opinion that even if the partial applications are included, the self-service trade would be overlooked. One state administrator offered to assist us in coordinating a survey encompassing all individuals, both walk-in self-service and others. One state level researcher indicated that some simple experiments were being conducted using UI files for such follow-up purposes.

APPENDIX B-2

SITES VISITED BY BCS PROJECT TEAM
AND INDIVIDUALS CONTACTED

CALIFORNIA

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Howard Nanto, Manager
Nick Grubic, BVR (Social and Health Services)
Bill Burman, Operations Manager
Jim Mendex, Superintendent of Applicant Services
Mary Arbuckle, Superintendent of Unemployment Insurance
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Charlotte Beeler, Director
Daniel Medonich, Deputy Director
Richard Thompson, Manager, ES
James Hussman, Asst. Manager, ES
Gordon Borreson, Counselor
Lois Hammon, Librarian
Seattle Employment Security Office
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Seattle, Washington

APPENDIX B-3

SITE VISIT FORMAT

1. Introduction To Managers

   Describe Study Objectives: Productivity Measures, particularly the problem of weighting outputs; the implicit problem of determining output flows ("intermediateness"). This requires we observe flows and try to determine how decisions are made in routing an applicant to the various alternative routes of treatment.

2. Observe Procedures

   Ask to see and speak with an intake person. If possible observe intake and ask staff person to verify routing alternatives. Compare with model flow diagram.

   Once routing is established ask how procedures (or likely flows) vary for:

   job-ready applicant
   UI claimant
   Food stamp recipient
   WIN
   CETA

   Note significant deviations from model flow diagram.

   Ask to observe nonplacement activities or discuss their importance.

   Questions on Search Behavior. Ask intake person or counsellor:

   - How many people are currently employed who use ES?
   - How many use other methods while they use ES?
   - How much applicant time is usually required?
   - How many seem to have a good feel for the market and how many are really ignorant of market conditions?
   - Do any people get discouraged after coming to ES?
   - How many who don't take an ES referral subsequently do get jobs?
   - What kind of applicant follow-up is currently done? How hard would it be to do complete 100% applicant follow-up?
   - Could we use applicant files for follow-up sample on those not placed?
   - Could we survey JIS users who never see interviewer?

3. Discuss with the manager observations on flows and differences by type and also observations on search behavior of applicants.

4. Write up visits.

APPARENT FLOW OF ES ACTIVITIES

One of the objectives of our site visits will be to identify and verify the flow of activities which occur in a "typical" ES local office. The accompanying flow chart and the descriptions below synthesize our understanding from our reading of these activities and their interrelationships. The accompanying diagram identifies the major activities and the general flow from one activity to another. Most of the activity categories involve decisions as to the next step to be taken. Thus, the outcome of one activity may be one of several possible alternative activities. Where several possible directions might be taken, the emanating arrow is begun with an asterisk.

COMMENTS

ACTIVITY DESCRIPTIONS

Reception, Application Taking, and File Check. The job applicant is interviewed briefly, and given a form to fill out with relevant personal characteristics and job history. When the form is completed, occupational codes are assigned, and a file check is done to see if this is a new applicant or a reapplicant. Job orders are searched for a possible job opening. This activity can lead to several possible outcomes. The individual may be referred to the job bank, he may be directly referred, he may be sent to the Veterans representative, or referred to counseling or testing.

Job Information Service (JIS). This is primarily a self-help service for the job-ready. It consists of a listing or file of descriptions of potential job openings which is directly accessible to the applicant. Veteran's preferences are listed separately. He is in effect, allowed to choose a possible referral for himself. Included is the Job Bank, which consists of a file of out-of-area jobs, often in the form of a computer print-out. Other employment and job-search related materials (such as transportation information are also available. The outcome of the applicant self-search may be a referral or return to reception.

These activities are designed in part to attract applicants and make them aware of the assistance available to them at ES. Outreach is primarily for making contact with specific target groups. The outreach worker makes person-to-person contacts at homes or places where a target client group may congregate. News media, community groups, etc., are also used. Orientation consists of group sessions designed to acquaint those with little labor market knowledge

Job Information Service (Cont.). of local opportunities and services (such as ES) available to them. This activity appears to merge with counseling.

COMMENTS

Veterans Representative.

The role of the Veterans Representative is not entirely clear. Veterns are generally referred to the Veterans Representatives, who may have some job orders which are distinctly "veterans preferred" or for "veterans only". He is also supposed to see to it that veterans get the priority due them under the law. The veterans representative may lead the individual to a direct referral, or direct him to counseling or testing.

Counseling.

In this step, a job applicant who needs assistance developing a vocational plan or overcoming problems that might prevent employment is interviewed and the problems discussed. Assistance is given in the development of a vocational plan or further steps are recommended to overcome employment related problems.

Testing.

In this step the applicant is tested for aptitudes,knowledge or skills to assist in the identification of potential job openings for him.

Referral to Training.

The applicant is interviewed and a determination is made as to his training needs. Application forms are completed and the individual referred to the appropriate agency.

Training.

This step is not an ES function. However, it may still lead to referrals and placement after the individual has completed training. One thing we need to identify is the point at which someone who has completed training reenters the ES activity flow.

COMMENTS

Referral.
As can be seen on the chart, all arrows lead to this box. Referral is the process of matching the applicant with a particular job order and sending him to the employer. Referral can have one of two outcomes, -- either a placement or an individual not placed. If a placement is accomplished, then there will be some follow-up contact to verify that the individual is going to be able to retain his job. If the individual is not placed,one of two steps can occur. Either he is referred to another job opening or he reenters the process at some other point, perhaps for counselling or testing. This is another area where the literature is not very clear.

Job Development.
This activity involves ES employees actively soliciting job openings in order to generate job orders. The process is an ongoing one, but can also arise out of the referral process. That is, when a particular applicant shows up at ES,an ES employee may attempt to develop a specific job for him through an employer already known to the office.

Job Order Taking.
Job Order taking is one outcome of job development. Also, job orders will arise without solicitation. Job orders are invariably taken by telephone, and they are assigned the appropriate occupational code and a complete order form is filled out. When a job order is received, a file search is undertaken to attempt to identify appropriate applicants who might fill the job.

Listing.
This process consists of introducing the job order into the JIS job bank or other filing system. In addition, specialists in particular occupational categories may be notified, and the veterans representative will be notified of the listing if veterans are preferred or required.

OTHER ACTIVITIES

a. UI work test -- claimants are provided referrals to test attachment to labor market.
b. Food stamps -- essentially same as UI test above for Food Stamp recipients.
c. Immigration waivers -- certification of lack of particular skill availability in local market.
d. Miscellaneous -- Viet Namese refugee placement, rural outreach services, etc.

APPENDIX C

CONCEPTUAL DEVELOPMENT: LABOR EXCHANGE AND ENFORCEMENT VALUES

1.0 INTRODUCTION

Output valuation in the absence of prices must begin with the source of value, the benefits which may be presumed to be generated by outputs. Conceptual specification of benefits in a rigorous manner indicates the measures which would, ideally, serve as value weights for outputs. To measure all components of the conceptually "ideal" value weights may not be cost effective or even feasible, and some compromises will most likely be necessary in developing practical measures. But rigorous specification affords a basis for estimating the information lost by such compromises and may also suggest proxies for the significant components sacrificed to practicality. As a result, operational measures can be developed in full awareness of the tradeoff between practical needs and conceptual inclusiveness.

This Appendix covers in a somewhat more rigorous manner material summarized in Chapter 5. Conceptual measures are derived for enforcement and labor exchange outputs. In each case, the implications of simplifying concepts for measurement purposes are developed in terms of relevant information which would be omitted. Also, empirical questions are identified which help determine the extent to which simplifying assumptions are warranted and the use of various proxy measures might be valid.

2.0 ENFORCEMENT OUTPUT VALUE

2.1 Conceptual Measures

Social benefits of ES enforcement activity derive from the prevention of (1) output losses and (2) direct expenses of invalid claims against welfare accounts.* Also, invalid claims are prevented by detecting those claims already in process and by discouraging those claims which would otherwise be made in the absence of any risk of detection. An invalid claim imposes costs on society consisting in any period of the direct expense against the welfare account, C_t, and the net output lost from resources which are unemployed because of the subsidy from the invalid claim. Net output is the difference between real output produced during the claim, W_c, and the output which would have been produced without the claim, W_o.

The savings from invalid claim detection consist of the present value of the stream of costs prevented for the balance of the claim period. If detection occurs in period d and the claim ends in period e, the value of detection activities at period d is summarized by:

$$(1) \quad \sum_{i=1}^{n} \sum_{t=d}^{e_i} (C_{it} + (W_o - W_c)_{it}) (1 + r)^{-t}$$

where the subscript i represents the individual claims detected, and r is the appropriate social rate of discount.

Enforcement activity increases the probability of detection and thus the expected costs to individuals of engaging in invalid claims activity. Hence it is likely that different levels of policing and detection will discourage invalid claims over and above those actually detected. Using the same conventions as above, denote claims prevented or deterred by the subscript j. Then the present value at time zero of claims prevented can be summarized by:

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* Considered globally only the output losses are net social costs to society since the welfare claim is a transfer payment. However, if society is divided into invalid claimants and everyone else, the latter group gains both components by detecting invalid claims.

$$(2)\quad \sum_{j=1}^{m} \sum_{t=0}^{e_j} (C_{j_t} + (W_o - W_c)_{j_t})\,(1 + r)^{-t},$$

where j represents individual claims prevented. The total value of policing activity is then given by the sum of expressions (1) and (2).

2.2 Empirical Questions Related to Enforcement Output Value

With respect to enforcement, it is logical to discuss detection value separately from the value of prevention. Both the amount and end point of the invalid claim detected are directly measurable. If the claim is in fact invalid, it might be presumed that the claim would go to exhaustion regardless of what happens in the local labor market. However, this may not be a certainty. Therefore, our first question is:

(1) Has past review of either food stamp or UI claims ever uncovered any invalid claims which were voluntarily relinquished prior to detection?

Another question related to detection is the actual level of the variable W_o, the real income (which would have been produced) during the claim period. If an individual truly has no productive opportunities, this variable may be presumed to equal zero. But if the claim is in fact invalid, it is also possible that present earned income is in fact significantly greater than zero. Thus a second question is:

(2) Among invalid claimants, what is the likelihood that present earnings are significantly greater than zero?

The variable W_c, earnings after the claim ceases can be estimated at the level of the placement (if it is accepted) or may be assumed to equal W_o (if the work test placement is not accepted). However, it is also possible that even if workers do not accept placement, they may increase their earnings by taking another earnings opportunity after the invalid claim is stopped. Therefore, there are the additional questions:

(3) What proportion of work test placements are accepted and rejected?

(4) Of workers rejecting work test placements, is there any significant difference between their subsequent

earnings position and either that of the rejected placement or W_0?

Prevention is much more difficult to measure on an ongoing basis. It seems reasonable to expect that claims prevented will vary directly with the risks of detection. It may therefore be possible to investigate the empirical relationship between either the probabilities of detection or the level of work test activity on the one hand, and incidence of invalid claims on the other. Based on such relationships we might infer:

(5) What is the prevention productivity of a given level of detection activity?

3.0 LABOR EXCHANGE OUTPUT VALUES: THE IMPORTANCE OF JOBSEARCH

We have encountered widespread recognition of the role of the ES as an agent to improve the efficiency of the labor market. At the same time, there is apparent confusion on how to interpret the concept of improving efficiency of the labor market. The concept is frequently simplified to minimizing the duration of unemployment, which ignores the investment aspect of search by unemployed individuals. A very well-developed body of economic literature on job search does exist, but does not appear to have been very well applied in dealing with ES activities. This literature offers some significant insights into the true benefits of the ES. While some of this literature is quite technical and highly mathematical, its essence is a simple application of investment theory to the activity of jobsearch. In this section, we abstract the essential concepts from this literature in order to develop a conceptual framework which will facilitate discussion of the efficiency role of ES in Section 4.0 below.

3.1 The Benefit of Jobsearch To An Individual

An unemployed individual, technically, is a member of the labor force not currently employed but actively seeking employment. It is important to maintain a distinction between individuals actively seeking, and individuals who have opted to stop seeking employment. Technically speaking, the latter are not unemployed. They may be supporting themselves out of past income, or non-market activity, and they may be of interest from the point of view of income distribution policy. But they are not technically potential clients of the labor exchange function of the ES.

For those individuals who are actively seeking employment, we consider first the simplest case, where an individual simply devotes his own time and no other resources to the activity of jobsearch. This activity is an investment because there is some sacrifice of productive opportunities in the present for a future improvement over those implicit in the existing productive opportunities. The theoretical literature is quick to point out that "productive opportunities" may consist of leisure time, unemployment insurance payments, and the real income (psychic as well as money) from both the non-market and market activities which must be sacrificed in order to search and which must be improved upon for search to be worthwhile. Figure 1 illustrates the type of trade-off that an individual job seeker makes. At a point in time, suppose these known opportunities yield an individual an income stream consisting of I_0 in each period. This income stream is available to him without search, and represents the opportunity cost of his time if devoted to alternative activities. However, suppose he is also aware of the distribution of job opportunities for which he is qualified. Given the knowledge of this distribution, the individual may assign probabilities to his chance of finding improved income streams with increased search. The expected value per period of the income streams I_1, I_2, I_3 for example, might be produced by spending the respective amounts of search time S_1, S_2 and S_3. Figure 1 illustrates that the phenomenon of diminishing returns may characterize the expected increments to the currently available income stream per constant increments in search time.

On the benefit side, if the individual searches during one time period (to the point S_1) he is adding an increment of $I_1 - I_0$ to his income in every period after S_1, at a cost of I_0 in the first period (assuming he searches full time). If he searches beyond S_1 an additional period (S_2) he adds the increment I_2-I_1 to his income in every period beyond S_2, and so on. On the cost side, by searching one period, (assume the search is full-time) the individual will sacrifice one period's currently available income, (I_0). By deciding to search an additional period, the individual would add to his costs both the foregone income at his initial income level and the incremental benefit that he would have obtained had he stopped searching at point S_1, or I_0 plus the increment $I_1 - I_0$. In other words, with a fixed working horizon, (T_n) search time takes its toll in the time available for future work and thus each subsequent period devoted to searching costs the individual more than just his initial opportunity (I_0) per period. (A mathematical derivation of this point is contained in the Appendix.)

Given these simple assumptions, the decision faced by an individual at time period 0 is how long to search. It should be mentioned, of course, that the decision is complicated slightly by the fact that dollar values in future time periods are valued at less than in the present period. In other words, both costs and increments to income should be discounted to reflect their remoteness and the extent to which remoteness reduces the individual's present evaluation

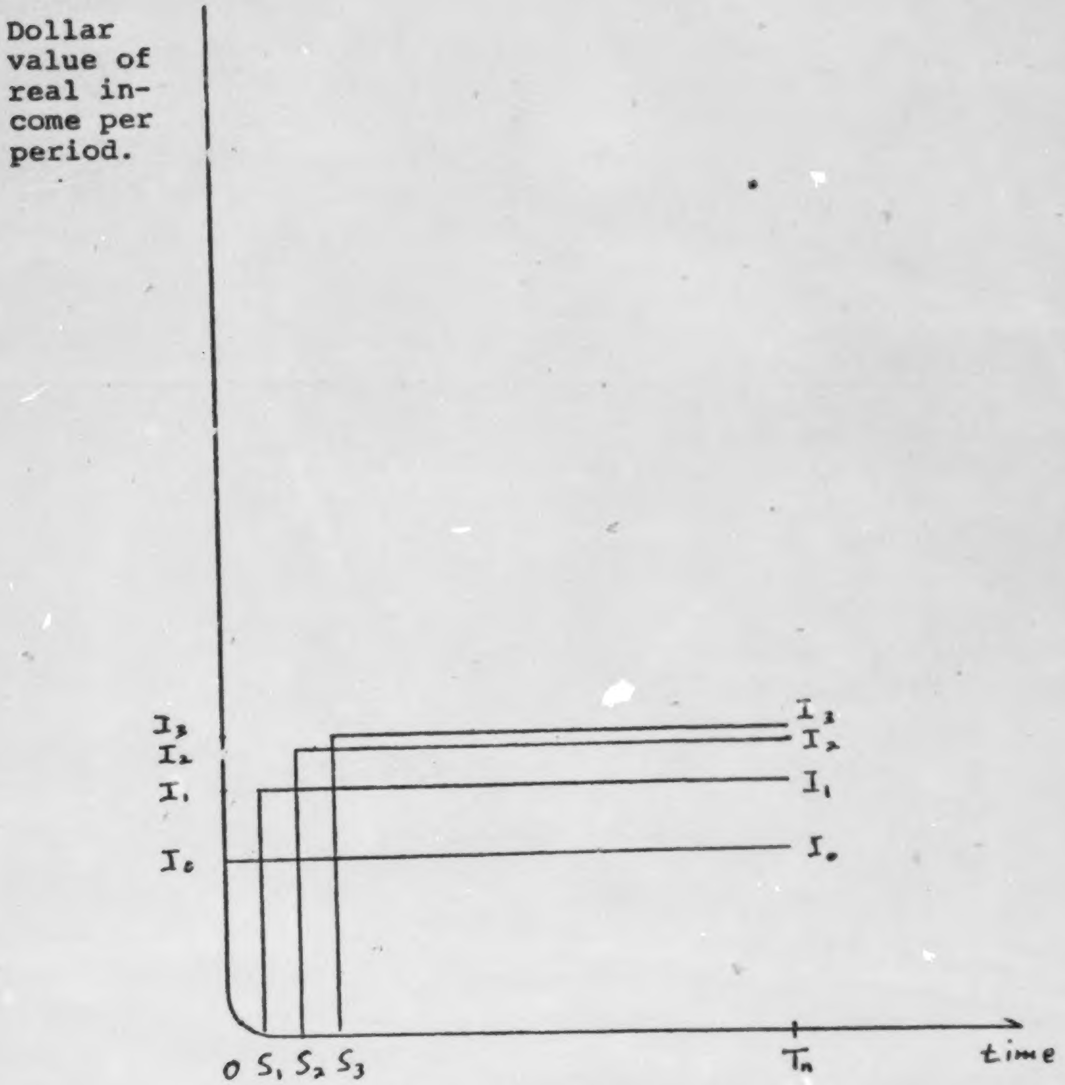
Dollar value of real income per period.
I_3
I_2
I_1
I_0
I_3
I_2
I_1
I_0
0
S_1
S_2
S_3
T_n
time

FIGURE 1

Illustration of Trade-off Between Job Search

And

Improved Future Income Stream

of them. Economic theory dictates that the individual will have made the most of his search investment when continued search adds less to the present value of his future income stream than the incremental present value of his search costs. Figure 2 illustrates how the present values of the incremental benefits and costs associated with different levels of search might look. This diagram is constructed to reflect an "optimal" level of search of four periods (S_4).

3.2 Jobsearch as an Optimization Problem

In Section 3.1, we have explored intuitively some results concerning the determinants of optimal search investment (both intensive and extensive). In this section, a simple mathematical model of jobsearch behavior is used to derive these results somewhat more formally. The model is distilled from theoretical economic literature on jobsearch (chiefly models by Gronau, McCall, and Stigler), abstracting from that literature the minimum of complexity required for illustrative purposes.

The model begins with the job searcher's objective function specified in terms of search time. This specification differs somewhat from Stigler's model, where the objective function is specified over offers received. We use search time simply because it makes derivation of results more straightforward. For the moment we assume the job searcher's own time measured by S is the only input into the search activity. Let the best certain alternative open to the individual (some combination of his current market and non-market sector earnings, unemployment insurance, and leisure) be represented by a wage rate of I_0 per period t. Assume that I_C does not vary with time. Let a represent the proportion of I_0 which must be given up in performing the search activity. We assume a is fixed by biological or subsistence requirements. Then the total search cost, in present value terms, is given by

$$C = \sum_{t=0}^{s} a\, I_0\, (1 + r)^{-t},$$ where r is the appropriate discount rate.

This is the discounted sum of foregone alternatives over the search period.

On the benefit side, the value of search to the individual is an improvement to the individual's income stream represented by dI (assumed constant) in each time period over some time horizon N, assumed invariant for all jobs. The fact that some jobs are shorter duration than others may be taken account of by assigning them a correspondingly lower value of dI. This increment is measured as the money value of market and non-market benefits including leisure. To the extent that jobs of relatively shorter duration have tie-ins with other opportunities (such as contingent employment offers), the value of such opportunities are assumed to be taken account of in the value dI. The benefit of search is that it positively affects the level of the increment to the individual's income stream; that is, dI is a function of S such that $dI'(S)>0$, $dI''(s)\leq 0$. For simplicity we have ignored the probabilistic aspect of the benefit stream. Gronau shows that when this aspect is considered, the individual's wage demands decrease over the search period, but this result is not necessary for the present purposes. Consequently, dI(S) may be interpreted as a known transformation or certainty equivalent of the incremental income per period associated with a given level of search, S. The benefits from search are then given by

$$B = \sum_{t=S+1}^{N} dI(S)\ (1 + r)^{-t},$$

or the discounted sum of the incremental benefits over the job horizon.

The job seeker's objective function is then

$$(1)\quad B-C = \sum_{t=S+1}^{N} dI(S)\ (1 + r)^{-t} - \sum_{t=0}^{S} a\ I_0\ (1 = r)^{-t},$$

which the job seeker optimizes with respect to S, the search time. The necessary condition for an optimum is that the first derivative of (1) with respect to S be equal to zero.

$$(2)\quad \sum_{t=S+2}^{N} (dI'(S + 1))\ (1 + r)^{-t} = (dI(S^*) + aI_0)\ (1 = r)^{-(\overset{*}{S} + 1)}$$

where the left hand side represents the incremental benefit in terms of an enhanced income stream from moving from S to S+1 periods of search and the right hand side represents the cost of this change.

Note that the marginal cost is composed of two parts; the foregoing of an additional period's opportunities, aI_0; plus the loss of the incremental income that the period which was attainable with the previous level S of search, dI(S). This second cost effect is a consequence of the fact that search time consumes part of the searcher's working horizon, a point made by Gronau but overlooked by McCall and Stigler.

The optimal value of S is that value (S*) which satisfies equation (2). The term dI' (S) is a decreasing function of S, so the left hand side of (2) unambiguously rise with S beyond S=1 even though dI(S) increases with S because discounting reduces the present value of both components of the marginal search cost. For a stable optimum, the slope of the marginal cost relationship must be greater (or a smaller negative number) than that of the benefit relationship. The value of (1) at S* then represents the benefit of search to the individual.

3.3 Effects of Perturbations on the Optimal Search Investment.

While the foregoing analysis is a highly simplified distillation of the logic found in various economic articles on the subject of job search, it is useful for defining and understanding the relevant variables in the job search decision. It is also useful for showing what happens when external factors affect either the benefits or costs of search. Consider for example, the effect of a decline in opportunities generally. This decline might occur, for example, if foreign tariffs suddenly reduced the demand in a domestic export industry causing workers in that industry to lose their jobs. As long as there are other industries which do not rely on the same export market and for which these same workers are occupationally qualified, such a situation could be viewed as a downward shift of the individual's opportunity cost curve. Figure 3 is a "smoothed" representation of Figure 2, illustrating the effect of the hypothetical tariff-induced reduction in opportunity costs on the most productive or "optimal" level of search investment. Since search is now less costly, the rate of return to search, or alternatively, the value of finding a placement has increased. Clearly, individuals in this situation will increase their investment search from S to S'.

In this framework it is clear that unemployment, interpreted to reflect the active search for work, should not be considered unproductive. It is also easier to understand why unemployment may be correlated with expectations of increasing opportunities, as during inflation, as well as with the usual cyclical declining opportunities. To illustrate this point consider an analagous situation on the benefit side. If there were a change in favor of the non-export dependent industries which resulted in an independent upward shift of the incremental benefit curve, placements would also become more valuable. One example of such an occurence is when improvement in seasonal construction opportunities influence turnover rates in the shipbuilding industry.

When economic conditions affect both an individual's present opportunity and those which can be uncovered through search, it is not clear what the result will be. In terms of Figure 3, if both the incremental benefit and cost curves shift at the same time, the effect on an individual's search decision will depend on how they shift. This rather simple conclusion illustrates the importance of distinguishing external economic effects on the job market by industry or occupation.

3.4 Substitution of Other Inputs for Own Time in Jobsearch

So far we have considered an individual's time (and its opportunity cost) as the only input into jobsearch. To some extent, other inputs may be substituted for one's own time in the process. For example, the job seeker may subscribe to newspapers for purposes of looking at "want ads", he may subscribe to trade journals to get a better look at openings in his field, or he may pay an employment agency to place him.

When all inputs are considered in the search process, it is necessary to modify the preceeding analysis somewhat. The effect of different levels of other inputs to the search (production) process can be seen in Figure 4. Application of constant increments of other inputs (K) to given amounts of search time increase the incremental benefits of the search time but at a decreasing rate. Given the use of other inputs in the search production process, the individual faces the decision at some initial point in time not only of how long to search, but of how much of other inputs to invest in the process as well.

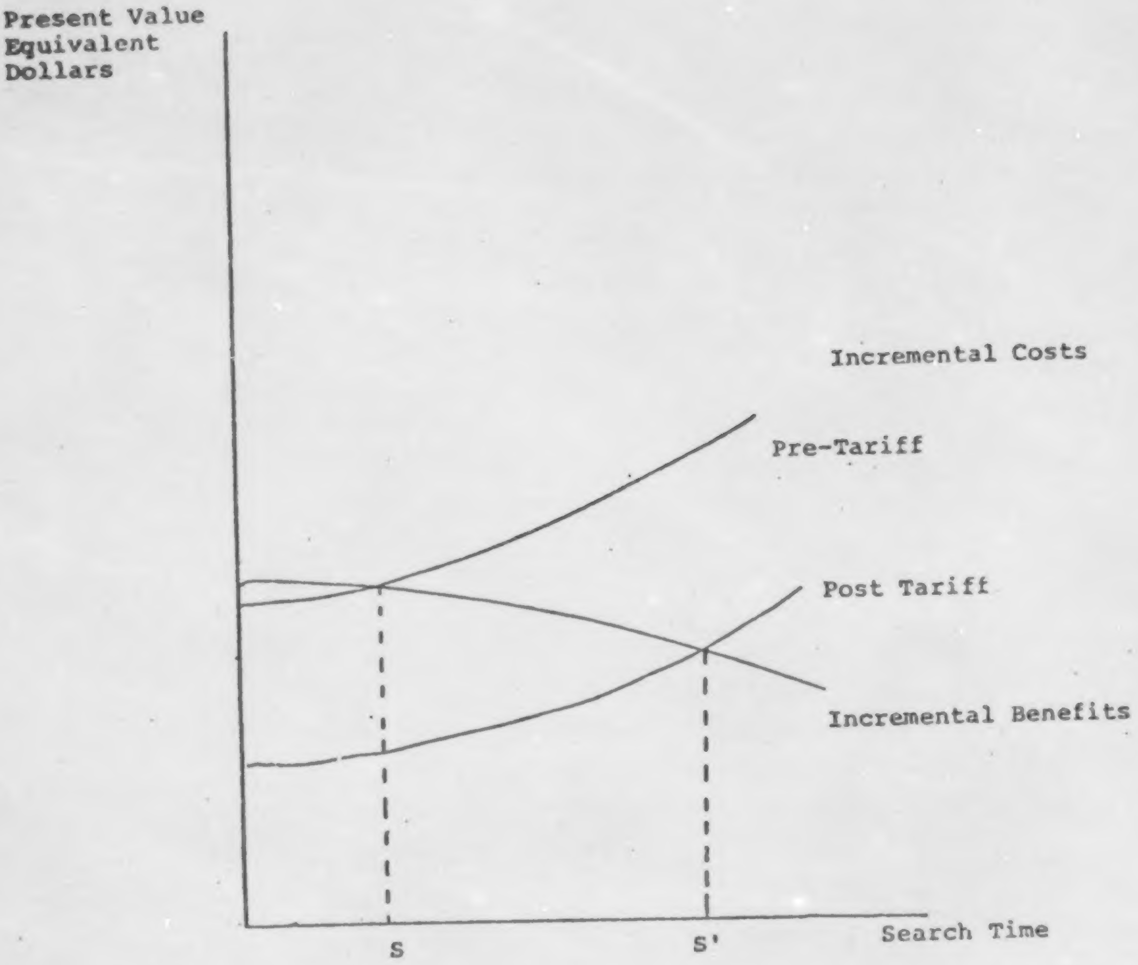

FIGURE 3
Effect Of Reduced Opportunity Costs
On Optimal Level Of Search

As in any production process, the decision of how to pick the best mix of other inputs and personal time in the search process will be sensitive to the relative prices of these items. Therefore, if an individual has decided on a given level of search in terms of both his own time and other inputs, and some change makes the other inputs available to him at a relatively lower cost than previously, he will substitute away from his own time toward more use of the other inputs. Also, since his combined costs of search are now relatively lower, he will now tend to increase his overall search activities. In other words, while he is using relatively more purchase inputs than before, he may also use more of his own time than before in an absolute sense. In economic jargon, this latter effect is known as the expansion effect of a change in input prices.

3.5 Summary of Relevant Variables

In the context of the simple framework presented here, the relevant variables in the jobsearch decision, i.e., those which enter into the job seeker's objective function, can be summarized quite simply:

1) The expected real income stream which can be obtained from different levels of search investment. If the law of diminishing returns applies, this value will increase with the level of search investment, although at a decreasing rate.

2) The best known alternative income stream. As mentioned above, "income" in this context may consist of some combination of market and non-market alternatives, including leisure plus income maintenance payments, such as unemployment insurance.

3) The time horizon or working life of the individual.

4) The expected duration and riskiness of the present opportunity.

5) The duration and riskiness of the improved opportunity.

6) Prices of substitutes for an individual's own time input such as newspapers or employment agency services*.

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* Moore (1966) 3.28 finds evidence on racial differences in jobsearch: whites have more informal contacts than blacks, and whites also use ES less. Since informal contacts are a substitute for the ES, the observations that they are less costly for whites and that whites use ES less are consistent with the hypothesis of sensitivity of jobsearch decisions to the relative costs of jobsearch methods.

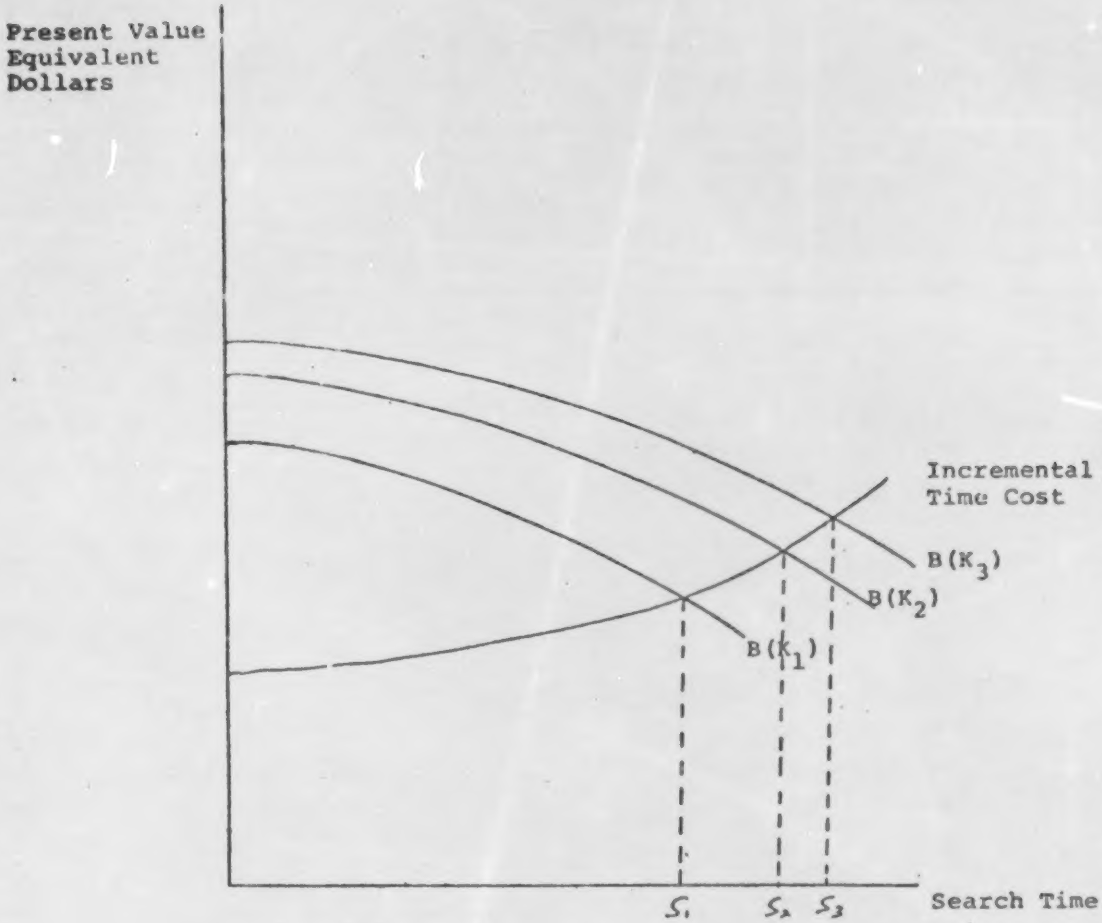

FIGURE 4
Effects of Capital on the
Marginal Productivity of Labor in Search Activities

From an individual's point of view, all these variables are parametric. That is, he cannot affect their values. All he can do is decide on the amount of his own time and other inputs to invest in the process of improving the present value of the income stream available to him.

At this point, it is worth noting that the simple model of the jobsearch production process which includes both an individual's own time and other inputs, is indistinguishable from training (and education) in a theoretical sense. Both training and jobsearch are investment activities involving an individual's labor and other inputs combined in a manner which is expected to produce a measurable improvement in his future opportunities. This conceptual affinity between the two processes has led economists to categorize them under the general rubric of "investments in human capital".

4.0 THE LABOR EXCHANGE ROLE IN A JOBSEARCH CONTEXT

The simple model of jobsearch described above offers a convenient basis for developing the economic role of an enterprise specializing in labor exchange functions. To begin with, we have a framework for distinguishing these functions and for identifying the benefits associated with them. We also have a framework for discussing the public finance aspects of these functions.

4.1 The Role of the Labor Exchange

Basically there are two types of service of value which could be provided by a labor exchange. It can increase the range of opportunities open to an individual or lower the cost of obtaining an offer from a given set of opportunities. In terms of the parameters listed above, a labor exchange can (1) enhance the differential income per period, (2) enhance the (elapsed) duration or reduce the riskiness associated with income streams, (3) produce more cheaply than currently available the services associated with search such as identifying an employer pool, finding job openings, matching skills to need and obtaining referrals.

In any case, the labor exchange service will have value to the individual, but it may not necessarily be measured in terms of reduced search time. As discussed in the preceding section, an individual decides on the most productive combination of his inputs into his search activity based on the expected returns and the cost of the services and his own time. Depending on whether the services offered by the labor exchange firm are complements or substitutes for the individual's own time, the individual may invest more or less of his own time when first confronted with the opportunity to use such services.

Consider for example the case where the employment service firm performs a function of screening the available employers to exclude those whose requirements don't match an individual's qualifications. In this case, the employer is really performing the same service an individual would by actually contacting the employers themselves. In this case, to uncover the same expected benefits, the individual has to spend less of his own time.

On the other hand, the employment service firm may make available to the individual a wider range of opportunities than he has initially considered. In effect, this broadens the dispersion of wage offers potentially open to the individual and makes his own search time more productive. In this case, then, he may invest more of his own time in order to cover the broader range of opportunities now available to him. Here the appropriate measure of the benefits to the individual is not saving in search time, or reduced unemployment, but the increment to his expected benefits from search. In fact, the incremental benefits from the service -- potentially, the amount the individual would be willing to pay for it -- can only be measured in terms of the improved benefits realized by the individual.

Thus, the only conceptually sound way to measure the benefits of the employment service firm in an efficiency sense is in terms of the benefits to the individual, and these may not always be equated to a reduction in search time. Also, if the individual can achieve some positive rate of return to his own search time, then the value of the services provided by the firm is the increment to this return. For example, we could not impute the entire difference in the present value of the individual's employment opportunities to the firm's output. Conceptually, we could only impute a value to the firm's output represented by the total return net of the individual's own time and his other input costs.

4.2 Efficiency Role of a Subsidized Labor Exchange

In the simplified model described above, we have ignored several problems which can hamper or render inefficient market activities by private decision makers. From the point of view of social values, private decision makers may not arrive at the best possible solution for a number of reasons. First of all, private decision makers respond to privately borne costs and privately realized benefits. For example, an individual will not consider as an incremental benefit that portion of incremental income which is taxed away. Nor will he consider as an incremental benefit the reduction in welfare payments required by his becoming gainfully employed. These are the two public benefits most commonly cited in literature as arguments for subsidized employment services.

There are other reasons as well. In the event that the private decision makers systematically misinterpret the true costs and benefits of jobsearch, then they invest either too much or too little in the activity and both private and public benefits will be foregone. This phenomenon can work both in positive and negative directions. Figure 5 illustrates the case where the job seeker systematically underestimates the initial benefits from jobsearch and overestimates the benefits from continuation. The true optimum in terms of the search time is S_1. However, because he is misinformed or ignorant of true possibilities, he chooses to continue beyond S_1 to the level of S_2. An example of this behavior is a rural worker who is relatively ignorant of local job opportunities and who at the same time overestimates job opportunities in urban areas because of recent migration to the area by relatives or friends. Moore (1966, p.30) cites a "follow the relatives" phenomenon of urban-rural migration as an illustration of such cases. There is a cost to society because the time spent searching from S_1 to S_2 costs more than it is worth. It will be in the interest of society as a whole to devote resources to educating the individual as to true possibilities in order to allow him to stop searching and to accept the job at S_1. Since coercion is not a viable alternative, education or counseling through a formal institutional framework such as the ES is a logical choice. Additionally, this educational role may consist of demonstrating the true returns to other self-improvement investments such as job-readiness training, vocational education and so on. It should be added that society's gains in this case include not only the increased output from earlier employment but also the reduced costs of welfare burdens or discontent which are avoided in this way.

It should be pointed out that neither of these arguments for subsidized employment services are by themselves arguments for providing these services completely free. In fact, from a purely conceptual point of view it is likely that the appropriate price level for subsidized services rendered is not 0.

Another argument for subsidized labor exchange services arises from discrimination by job suppliers or employers. To the extent that employers deny employment opportunities on the basis of criteria which are unrelated to productivity, society can gain from devoting resources to counteracting this type of discrimination. In cases where discrimination may arise from faulty expectations - for

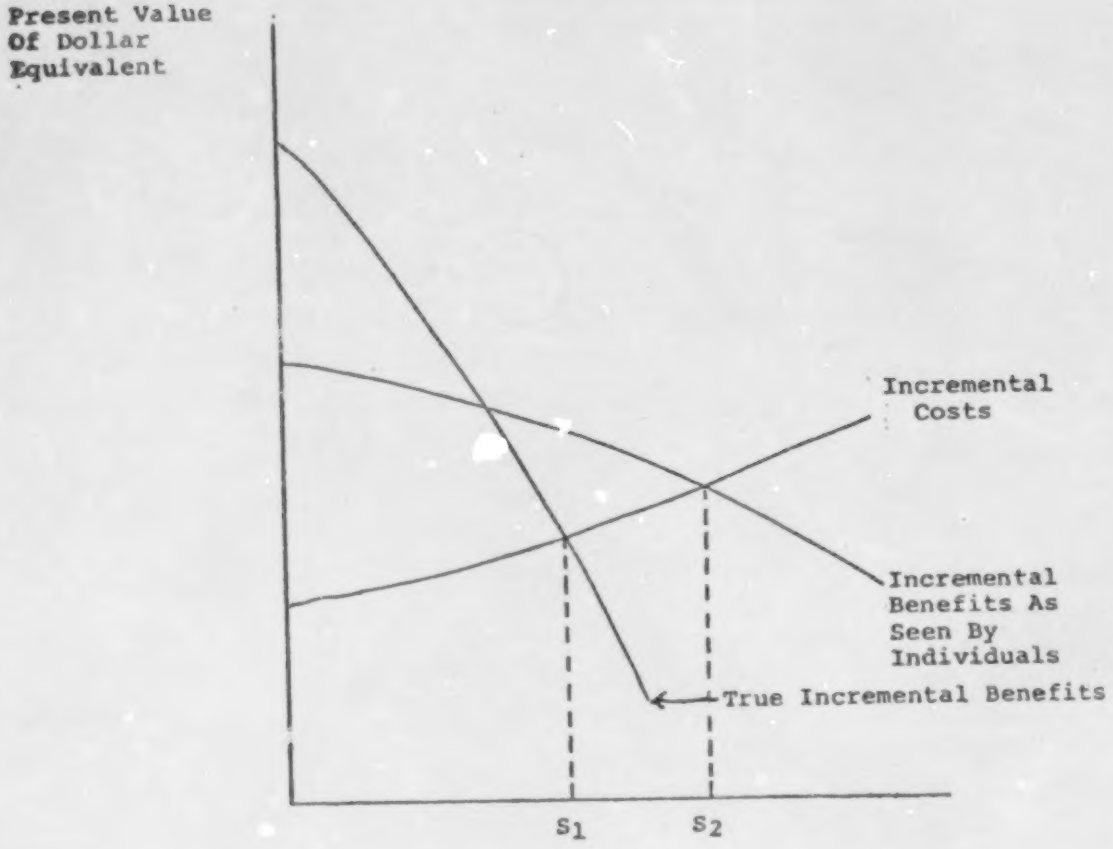

FIGURE 5
Divergence Between True Benefits
And
Private Expectations Of Returns To Search

example, the stereotype of high absenteeism and turnover among female workers - the role of the agency may simply be to educate.

Although not discussed in the literature, size of market area may also be a factor in creating the need for a subsidized labor exchange. The "decreasing average cost" phenomenon where the job market is so small as to eliminate private agencies to enter it would in some cases warrant a public labor exchange.

To summarize, purely in terms of economic efficiency, a publicly financed labor exchange may generate benefits in addition to those generated by a private agency by performing the following functions:

1) Correcting erroneous expectations of job seekers in order to allow better decision making on appropriate levels of search activity. Since expectations may apply to all parameters of the jobsearch decision - income differentials, risk, duration, and possibly search or job training costs - education or counseling returns may be measured in terms of their impact on any or all of these parameters.

2) Correcting erroneous expectations or counterproductive job requirements on the part of employers.

3) Correcting market levels of search and unemployment to account for reduced welfare obligations and increased tax revenues.

4) Entering job markets where private incentives are insufficient to provide services of positive net value.

5.0 LABOR EXCHANGE OUTPUT VALUES

The value of the search model is that it shows how the net benefits from the search investment can be expressed as a transformation of all the parameters of the job search decision: real income differentials, risk, duration, and search effort or cost. Correspondingly, the productivity of an employment service agency can be discussed and presumably measured in terms of these parameters.

An individual using the labor exchange services may end up in one of four circumstances: employment, unemployment (continued search), training, or non-participation in the labor market (drop-out). In a general sense, each of these states is a type of "placement", the first three being market alternatives and the latter a non-market alternative. The non-market alternative may involve a significant ES contribution as well as the market alternatives. If, for example, the ES aids an individual in arriving at the latter outcome, the implication is that individual has been spared some unproductive search time; it is not strictly true therefore, that all the benefits of the employment service labor exchange activities can be measured in terms of their effect on placement in jobs. In fact, associated with each type of placement are real income streams and search costs, and it is possible therefore to construct a perfectly general model of placement value which is applicable to all of them. The following section develops a generalized placement value formula. Section 5.2 develops implications of imposing certain restrictions on the formula which have the effect of bringing it within operationally feasible bounds. Section 5.3 derives empirical questions to determine the acceptability of these restrictions.

5.1 A Generalized Placement Value Formula

The value of a placement is the sum of the present values of the placement to the individual and to firms.

$$V_p = V_i + V_f$$

In the case of non-employment and non-training placements, of course, the value to the employer is zero. The present value of the placement to the individual is the differential benefit stream of the placement over current opportunities less search costs borne by the individual:

$$(3)' \quad V_i = \sum_{t=n_i}^{n_p} W_i(p)_t (1+r)^{-t} + \sum_{t=s}^{n_i} (W_i(p) - W_i(o))_t (1+r)^{-t} - \sum_{t=0}^{s} (C_i + W_o)_t (1+r)^{-t}$$

where $W_i(p)$ = monetary equivalent of monetary and nonmonetary (job satisfaction, training, leisure time, etc.) compensation in the placement in a single time period

$W_i(o)$ = compensation (in same terms as $W(p)$) from opportunities available at zero search cost, "baseline" opportunity

t = time subscript; all variables in (3) are implicit but known functions of time

r = individual's rate of time preference (discount rate)

s = length of search period

C_i = search cost borne by the individual over and above own time in a single time period (also an implicit function of time)

n_i = endpoint of baseline opportunity

n_p = endpoint of placement opportunity

The first term in (3) expresses (discounted) real earnings for the extended duration of the placement. The second term expresses differential real earnings accruing over the original working horizon after search has ended. These include opportunities subsequent to the initial placement which are part of the job stream of the placement, i.e., they become available at no search cost to the individual once he has entered the initial opportunity. Compensation is expressed as the sum of monetary and nonmonetary benefits in monetary equivalent terms. The third term expresses search costs, including direct expenses and the opportunity costs of the individual. We assume that search is full time, hence the total of $W_i(o)$ is foregone by searching.

The present value to the employer is perfectly analogous. It is the sum of benefits from extended duration, the differential benefit over the original time horizon, less search costs borne by the firm. It may be expressed as:

$$(4)\quad V_f = \sum_{t=n_f}^{n_p} W_f(p)_t (1+r)^{-t} + \sum_{t=s}^{n_f} ((W_f(p) - W_f(o))_t (1+r)^{-t}$$

$$- \sum_{t=k}^{s} ((C_f + W_f(O))_t (1+r)^{-t}$$

where

$W_f(p)$ = net earnings of the firm generated by including the new employee in the single time period.

$W_f(O)$ = net earnings of the firm available at zero search cost

C_f = search cost borne by the employer in a single time period

k = the difference between search time spent by the employer and search time spent by the individual (k may be positive, negative or zero).

n_f = endpoint of baseline opportunity (for simplicity this is assumed the same as for the individual - $n_f = n_i$)

n_p = endpoint of placement opportunity (since we are considering the value of the same placement as that for the individual, the endpoint is the same)

As before, the first two terms represent discounted benefits of the placement and the third term the discounted costs, including resource costs and profitability foregone by not utilizing resources available at zero search cost. Also as before, benefit and cost elements in a given time period are known functions of time. We assume for simplicity that firms and individuals operate with the same discount rate.

Expanding V_p and combining terms yields the following expression for total placement value, we assume for simplicity that n_i and n_f are equal.

$$(5) \quad V_p = \sum_{t=n_i}^{n_p} ((W_f(p) + W_i(p))_t (1+r)^{-t}$$

$$+ \sum_{t=s}^{n_i} (W_f(p) - W_f(o) + W_i(P) - W_i(o))_t (1+r)^{-t}$$

$$- \sum_{t=k}^{s} ((C_f + C_i + W_f(o) + W_f(o)) (1+r)^{-t} - C$$

where all symbols are as defined above and C is non-zero in two cases depending on the sign of k:

$$C = \sum_{t=o}^{k} (C_i + W_i(o))_t (1+r)^{-t}, \text{ for } k > 0 \text{ (i.e. firms search less than individuals)}$$

$$= \sum_{t=k}^{0} (C_f + W_f(o))_t (1+r)^{-t}, \text{ for } k < 0 \text{ (i:e. individuals search less than employers)}$$

The first two terms in equation (5) represent total social benefits and the last two represent costs of the-placement.

Before analyzing the productivity of the labor exchange in terms of the components of V_p, some discussion of how demand factors affect these values is in order. If there is a relatively high unemployment rate (or low vacancy rate) in an individual's occupation, it will affect the following terms relative to situations of lower employment:

$W_i(o)$	is likely to be lower (there is a higher likelihood the individual will be unemployed himself),
$W_i(p)$	is likely to be lower (a given search investment will be likely to yield a lower wage differential),
C_i	is likely to be higher (it will be more difficult to find a placement),
C_f	is likely to be lower (firms will have an easier time finding employees),
s	is likely to be longer, and
k	is likely to be shorter.

Since the changes in C_f and $W_i(o)$ offset the changes in C_i and $W_i(p)$, and changes in k offset those in s, the net effect on placement value depends on the relative magnitudes of the effects on each component. If unemployment occurs in an industry in which the individual is employed but not in other industries utilizing the same occupation, the net effect of unemployment is to increase the value of the placement to the individual (and thus create an incentive to seek out the placement, i.e. to switch jobs) vis-a-vis the lower unemployment situation. The net effect on firms is to lower the value of the placement since employees are easier to find. The important point here is that "external factors", or changes in economic demand conditions have a definable, but complex, impact on placement value, and that this impact is included (at least conceptually) in measures of placement value.

The effect of the labor exchange may also be expressed in terms of the components of V_p. As discussed in the text, the labor exchange effects are likely to be observed as changes in any component except $W_f(o)$, $W_i(o)$, n_i and n_f which characterize given opportunities available without search. If we assume individuals and firms make decisions which tend to maximize the values

V_i and V_f, respectively, then it is appropriate to consider observed values of $W_f(p)$, $W_i(p)$, C_f, C_i, s and k as "optimal" in the sense that they are the result of maximizing behavior and are thus chosen over all other opportunities.

In this context, the impact of the ES may be measured conceptually as the difference between some V_p' arrived at by decision makers in the absence of the ES and a (presumably) larger value, say V_p'', arrived at with the help of ES. The impact of ES (i.e., the marginal value product of ES) can then be expressed as $V_p'' - V_p'$.

Since the ES can affect both search costs and benefits for individuals and firms, it is likely that maximizing behavior would lead to different search time investments with ES assistance than without it. Both s and k could vary positively or negatively. If the ES uniformly affects marginal benefits and costs of search by individuals and firms (for example by making search more productive at every level of search) it is likely that the investments in search time will increase (larger values of s, lower values of k). In this case, s" is greater than s' and k" is less than k'. We also allow for the possibility that the duration increases (i.e., n_i is greater than n_p). In other words the sequence of events is:

time = o, individual begins search
time = k', firm begins search (in presence of ES)
time = k", firm begins search (in absence of ES)
time = s', individual stops search (in absence of ES)
time = s", individual stops search (in presence of ES)
time = n_i, baseline opportunity ends (assumed equal to n_f)
time = n_p, placement opportunity ends (in absence of ES)
time = n_e, placement opportunity ends (in presence of ES)

Then the value of the ES contribution to total placement value (i.e., the value of the ES placement output) is $V_p" - V_p'$, or

$$
\begin{aligned}
(5)\quad & \sum_{t=n_p}^{n_e} (W_f(ES) + W_i\ (ES))_t\ (1+r)^{-t} \\
& + \sum_{t=s"}^{n_p} (W_f\ (ES) - W_f\ (p) + W_i\ (ES) - W_i\ (p))_t\ (1+r)^{-t} \\
& - \sum_{t=s'}^{s"} (C_f(ES) + C_i\ (ES) + W_f\ (p) + W_i\ (p))_t\ (1+r)^{-t} \\
& - \sum_{t=k'}^{s'} (C_f(ES) - C_f(o) + C_i\ (ES) - C_i\ (o))_t\ (1+r)^{-t} \\
& - \sum_{t=k"}^{k'} (C_f(ES) + C_i\ (ES) + W_f(o) - C_i\ (o))_t\ (1+r)^{-t} \\
& - \sum_{t=o}^{k"} (C_i(ES) - C_i\ (o))_t\ (1+r)^{-t}
\end{aligned}
$$

This expression illustrates that the impact of ES is composed of additional benefits through extended duration and enhanced benefits (the first and second terms), savings in costs of conducting search (the fourth and sixth terms) against which must be balanced additional costs due to the extension of search (the third and fifth terms). Cases where search time is unchanged or reduced may be handled in similar fashion. In such cases, all ES effects will operate on placement value in the same direction.* Hence the case expressed in (6) is the most comprehensive of the possibilities.

---

* The effect of assuming that ES shortens search time can be summarized as follows. Now the time sequence becomes t=o, k', k", s", s', etc., since k" and s" represent the (shorter) search endpoints with ES assistance. Then the ES output value is

$$\text{(6a)} \quad \sum_{t=n_p}^{n_e} (W_f(ES) + W_i(ES))_t + (1+r)^{-t}$$

$$+ \sum_{t=s'}^{n_p} (W_f(ES) - W_f(p) + W_i(ES) - W_i(p))_t \; (1+r)^{-t}$$

$$+ \sum_{t=s''}^{s'} (W_f(ES) + W_i(ES) + C_f(o) + C_i(o))_t \; (1+r)^{-t}$$

$$- \sum_{t=k''}^{s''} (C_f(ES) - C_f(o) + C_i(ES) - C_i(o))_t \; (1+r)^{-t}$$

$$- \sum_{t=k'}^{k'} (C_i(ES) - C_i(o) - C_f(o))_t \; (1+r)^{-t}$$

$$- \sum_{t=o}^{k'} (C_i(ES) - C_i(o))_t \; (1+r)^{-t}$$

This might be the case if ES assistance tended to rotate marginal search benefit schedules, for example, by simply making the most profitable of a fixed set of opportunities available earlier. The result would be that marginal returns to search with ES assistance were much higher at first, but fell off more rapidly since the best opportunities are exhausted sooner. Given that opportunities are finite and, in many cases may be few, this result may in fact be most common.

As it stands, the expression (6) requires some available information and some information which is not easily measured. Even if all the components of V_p", the actual placement value achieved with the help of ES can be obtained, the value of V_p', the value of the placement which firms and individuals would have arrived at in the absence of ES, is not directly observable. We might assume that individuals and firms who do not use ES but are the same in all respects to those using ES provide a baseline case for measurement of V_p'. Even so, estimates of V_p' would require a major statistical project and may not be practical on a recurring basis. Before considering such a task it is worth exploring the components of (6) to determine (a) whether available information would allow us to simplify the expression and (b) what are the implications of simplifying the expression beyond that point.

5.2 Implications of Restrictive Assumptions

The formula (6) is a static conceptual model of the value of ES labor exchange outputs. We can determine the implications of various measurement conventions by exploring the effect of specific assumptions related to each component on the model. Six cases are explored in this fashion. Subsequently, differences in the treatment of the general formula for each of the specific placement types are discussed.

Case I: Last Resort Case. Assume that neither firms nor individuals have any opportunities available to them on their own at zero or any other level of search investment. In this case, since neither individuals nor firms have current other opportunities, they would not be willing to undertake any search activity on their own. The ES acts as an agency of last resort. The effect of this assumption is that both current "base case" and hypothetical opportunities ($W_f(o)$, $W_i(o)$, $W_f(p)$, $W_i(p)$, n_i, n_p)and search costs with and without ES ($C_i(ES)$, $C_i(o)$, $C_f(ES)$, $C_f(o)$, s, k) are zero. The value of a placement generated by ES in this case is simply the present value of the total benefit stream. All but the first two terms in (6) become zero, and the first two terms are collapsed and simplified:

$$V_1 = \sum_{t=s}^{n_e} (W_f(ES) + W_i\ (ES))_t\ (1+r)^{-t}$$

Although the assumptions indicated may be fairly strong, we note that they may not be completely unreasonable given the usual assertions about the ES client populati[illegible] We also note that the data required to measure V_1 is relatively easy to obtain, since they are all observable dimensions of the actual placement.

Case II: ES as Second Opportunity. Assume that firms and individuals have current opportunities available at zero cost but that no level of search investment is justified by their expectations of returns to search. Then the ES opportunity is the only one better than their present opportunity. In this case the previous restrictions on $W_i(o)$, $W_f(o)$ and n_i are relaxed. The value of the placement becomes the present value of a differential earnings stream:

$$V_2 = \sum_{t=n_i}^{n_e} (W_f(ES) + W_i(ES))_t\ (1+r)^{-t} + \sum_{t=s}^{n_i} (W_f(ES) - W_f(o) + W_i(ES) - W_i(o))_t (1+r)^{-t}$$

In this case, the assumptions may be slightly more realistic and while the value measure is [illegible]e complex, it is still tractable and can be measured to a reasonable degree from observable data.

Case III: ES as Third Opportunity with Low User Confidence. Assume that there is some level of search justified in the absence of ES but that there is no difference in the time or resources spent searching with or without ES. This case would apply if individuals and firms have so little confidence in the returns to using ES that they do not reduce their search activity even after contacting ES. The implication is that $C_f(ES) = C_f(o)$, $C_i(ES) = C_i(o)$ and $s" = s'$, $k" = k'$. Then,

$$V_3 = \sum_{t=n_p}^{n_e} (W_f(ES) + W_i(ES))_t \ (1+r)^{-t} + \sum_{t=s}^{n_p} (W_f(ES) - W_f\ (p) + W_i(ES) - W_i(p))_t (1+r)^{-t}$$

This measure differs from V_2 in that estimates of the hypothetical alternative must be obtained. Clearly this difference imposes a major added burden on measurement, but it is one which could be handled by constructing a schedule of "expected" or predicted values based on individual characteristics and local economic conditions.

Case IV: ES as Third Opportunity with High Confidence. Assume that users have sufficient confidence that all search efforts outside of ES cease. In other words, $C_f(ES) = C_i(ES) = 0$. Now consider two possibilities. Suppose first that there is no change in the amount of search time required. In other words, $s"=s'$, $k"=k'$. Then,

$$V_{4A} = \sum_{t=n_p}^{n_e} (W_f(ES) + W_i(ES))_t \ (1+r)^{-t}$$

$$+ \sum_{t=s}^{n_p} (W_f(ES) - W_f(p) + W_i(ES) - W_i(o))_t \ (1+r)^{-t}$$

$$+ \sum_{t=k}^{s} (C_f(0) + C_i(0))_t \ (1+r)^{-t} \quad + \sum_{t=0}^{k} C_i(0)_t \ (1+r)^{-t}$$

As before, this measure includes the differential benefit stream but it also includes two additional components. The additional components indicate that the ES is responsible for increasing the social value of the placement by eliminating both the individual and employer search costs.

A second possibility is that the ES actually reduces the length of the search period. In other words, s" is less than s' and k" is greater than k':

$$
\begin{aligned}
V_{4B} = & \sum_{t=n_p}^{n_e} (W_f(ES) + W_i(ES))_t (1+r)^{-t} \\
+ & \sum_{t=s'}^{n_p} (W_f(ES) - W_f(p) + W_i(ES) - W_i(p))_t (1+r)^{-t} \\
+ & \sum_{t=s''}^{s'} (W_f(ES) + W_i(ES) + C_f(0) + C_i(0))_t (1+r)^{-t} \\
+ & \sum_{t=k'}^{s''} (C_f(0) + C_i(0))_t (1+r)^{-t} \\
+ & \sum_{t=0}^{k'} C_i(0)_t (1+r)^{-t}
\end{aligned}
$$

The impact of a shorter search duration means that the impact of ES in terms of each component of placement value is positive. The first and third terms indicate that ES has extended the duration of placement benefits. The second indicates ES has enhanced the benefit stream over those available in the absence of ES. The third term also indicates that search costs are saved. The remaining two terms summarize the savings of search costs to both firms and individuals over the entire search period. Note that the only difference between V_{4B} and V_{4A} is the additional value produced by ES as a result of shortening the search period (the third term in expression V_{4B}). The only restrictions imposed by this case on the complete conceptual expressions (6) and (6a) are that non-labor search costs spent by firms and individuals are 0 when ES is assisting. If we relaxed this last restriction, the resulting measures are those stated in (6) and (6a).

The preceding five formulas capture the effect of a range of assumptions on the complete conceptual measures. We may suspect, a priori, some of these assumptions to be less realistic than others. At the same time, we can be certain that implication of the complete measures would be difficult and costly. In other words, there is a trade-off between the precision of the evaluation measures and the cost of implementing them. Some quite feasible measures are available but, conceptually at least, they are imprecise and may omit some key components of ES value. On the other hand, completely valid measures would be very expensive and in some cases nearly impossible to implement.

5.3 Empirical Questions

Eventually there must be an evaluation of the trade-off between information measures and the costs of obtaining the information. In terms of the specific measures discussed above, we should like to know what assumptions about the components of value faithfully represent reality, and what are the costs and feasibility of obtaining measures of the components. By direct observation, and when that is not possible by statistical inferrence, we may determine the probabilities that omitted factors will be significantly large.

Empirical questions can be grouped in four subject categories: ES outputs, placement benefits, search costs, and placement values.

ES Outputs. To begin with, it is of interest to estimate the relative importance of all ES outputs. Relative importance can be measured in terms of ES resources or simply labor time invested, and historical distributions of each output. The value of this information is in helping prioritize the effort devoted to providing measurement techniques. Our first question is then:

1. What are the characteristics of the distributions (across states in a given year) of resources devoted to:
   a. Enforcement Activities
   b. Labor market information activities
   c. Placement activities

2. Similarly, what are the distributions of outcomes of the placement activity:
   a. Primary placement in employment
   b. Secondary placement in employment
   c. Referral to training programs
   d. "Placement" in continued search, or "placement" out of the labor market

Benefits. There are two basic types of questions related to benefits. First, what is the interpretation of the various earnings and duration dimensions of benefit measures for the different types of outcome. Second, what are typical values for various components such as monetary earnings, non-monetary earnings, durations, and how do these vary in the presence of ES assistance. The answers to these questions would provide a determination of the extent to which the benefit dimensions of value measures can be simplified. With respect to applying benefit concepts to different types of output, it appears important to determine:

3. What empirical relationships exist which might allow us to state the deterrent benefits of enforcement as a general transformation of the direct detection benefits?

4. How can savings from the provision of labor market information be measured?

5. Can time in the program be used as a proxy or index for the benefit component $W_i(ES)$ in the case of pure training opportunities?

Related to the characteristics of specific benefit components, we would like to know:

6. What are the alternative means and associated costs of following up on $W_f(0)$, $W_i(0)$, $W_f(ES)$, and $W_i(ES)$.

7. For ES applicants and job orders, what is the probability that $W_i(0)$ and $W_f(0)$ are significantly greater than 0?

8. For these same groups, what is the probability that $W_i(p)$ and $W_f(p)$ are significantly different from $W_i(0)$ and $W_f(0)$ respectively?

9. What are the typical time paths of W_i and W_f?

Concerning duration of placement, we wish to know:

10. Are there significant differences between n_e, n_p, and n_i, n_f?

11. What is the typical duration of ES jobs (n_e - s")?

12. How can the duration of ES jobs best be followed up?

Search costs. The resulting measures are different depending on whether the impact of ES is to shorten or increase the search time (or search outlay costs) by job applicants and firms. Therefore, questions in this area relate to the three dimensions of search costs: opportunity costs of search, direct expenditures on search and search duration. Questions related to search opportunity costs have been discussed above under the earnings dimensions category. Related to search duration:

13. Controlling for other factors which affect search time, how does ES affect the average search time of individuals and firms; alternatively how does ES affect the probability of finding a job after a certain length of time? Is there a definite relationship between search time and unemployment and vacancy rates?

14. How does the duration of search differ among individuals and firms (what is the distribution of k)?

Concerning search outlays:

15. What are typical costs for firms and individuals other than opportunities foregone ($C_f(0)$, $C_i(0)$)?

16. Are the costs to firms or individuals using ES (but otherwise the same as those not using ES) differ significantly from those of individuals and firms not using ES ($C_f(ES)$, $C_i(ES)$)?

17. Since the major source of benefits for placements in further search or in choosing to withdraw from the labor market must come through reduced costs, can we distinguish ES impact on search expenditures by individuals and firms for non-employment placement outcomes?

18. What demonstrable relationship exists between macro measures of market conditions (unemployment, vacancies) and search outlay?

Value Comparisons. Based on the answers to the preceding questions, it will be possible to make sample estimates of value using the resulting formulas. It will be useful to have a check on these estimates from other sources. Comparisons which could be made are:

19. How do the various value measures available compare with private sector shares for comparable clients, occupations, and economic conditions?

20. What can be inferred statistically about the relative shares of ES along with other public and private inputs into the job match process?

APPENDIX D

THE IMPACT OF UI PLACEMENTS AND DENIALS ON UNEMPLOYMENT COMPENSATION PAYMENTS

1.0 INTRODUCTION

As discussed in Chapter 4, the Employment Service can be expected to have an impact on unemployment compensation expenditures through both its labor exchange and enforcement activities. The direct effect of placing UI claimants is one of the primary ones. To the extent that Employment Service finds such individuals jobs sooner than they may have obtained them through their own efforts, the length of time during which these claimants collect unemployment compensation is correspondingly reduced. Placement related activities, such as referral and counseling which do not result in direct placement can also be expected to have an impact. Individuals receiving these ES services may become more efficient in their jobsearch activities and thus find work sooner. This is the so-called "indirect" placement effect. To the extent that this effect is real, unemployment compensation payments will be further reduced.

It is important to recognize that a possible effect of Employment Service labor exchange activities is not necessarily to reduce search time. As we noted in previous working papers, it actually is possible for Employment Service efforts in behalf of its clients to lengthen the period of unemployment by increasing the set of job opportunities available to the individual and encouraging him to search longer than he otherwise might. It is conceivable that in some cases this effect could swamp the search-shortening effect, leading to a net increase in unemployment compensation paid.

The enforcement activities of the Employment Service can also have a significant impact on unemployment payments and claims. In order to be eligible for unemployment compensation, an individual must be available for and willing to work. If an individual does not appear for an Employment

Service interview or refuses referral or placement in suitable work, willingness and availability for employment are brought into serious question. The UI may then determine that the individual's claim is not valid and stop compensation payments. This process constitutes the UI work test. The impact on UI outlays is a saving of whatever additional payments would have been made on invalid claims in the absence of the work test.

Finally, the work test has a distinct deterrent component arising from the fact that many individuals who are actually out of the labor force might be tempted to file claims except for the fact that their willingness to work is tested. In this instance, the saving is potentially the maximum number of weeks of compensation for which the individual is eligible, since his plans do not seriously include working in the immediate future. (Individuals in this category include many secondary workers, who frequently drop out of the labor force for periods of six months or more, and older primary workers who have retired early but do not wish to start collecting social security or other retirement benefits yet). This deterrent effect can be substantial. In a cross-sectional analysis conducted in 1973-1974, Holen and Horowitz[1] found that for each additional claim detected by UI as invalid and denied, at least two more individuals did not apply for unemployment compensation. Thus, incremental denials actually reduce claims at a total (direct and indirect) rate of three to one. In probabilistic terms, the dollar savings of a deterred claim is the full claim value times (1 - probability of denial, given that the claim is actually filed).

Given these theoretical considerations, it is important to measure the actual impact that the placement of UI recipients and denial of compensation to those refusing suitable work actually has on the total amount of unemployment compensation paid out by the states. Our approach to measuring this impact is a multiple regression analysis, which attempts to isolate statistically the effect of UI claimant placements and claim denials due to refusal of work on the total number of claimants and weeks of compensation paid out by the states during FY 1974. The equations estimated were based on the rationale that, other things equal, a UI placement or claim denied for refusal to work would decrease the number of weeks of compensation paid out. Conceptual derivation of relationships for estimation are described in the following section. Results are discussed in Section 3.0. Section 4.0 discusses implications of these results for the problem of measuring Employment Service productivity.

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[1] Arlene Holen and Stanley A. Horowitz, "The Effect of Unemployment Insurance and Eligibility Enforcement on Unemployment", The Public Research Institute of the Center for Naval Analyses (PRI 74-1), April, 1974.

2.0 ESTIMATING RELATIONSHIPS

Conceptually, the total number of weeks paid out is the sum of total weeks paid to benefit exhaustees, $E \times W_1$, and the total weeks paid to non-exhaustees, $N \times W_2$, where E and N are exhaustees and non-exhaustees and W_1, W_2 are average weeks paid out, respectively. That is

$$TW = (E)(W_1) + (N)(W_2) \qquad (1)$$

We can explore the impact on T of placements, P, and denials for refusal of suitable work, D, through their impact on E, N, and W_2. Since W_1 is by definition the (statutory) maximum duration of claims in each state, we shall assume it be unrelated to either D or P.[2] Then the effect of a unit change in D on TW, (TW_d) is given by

$$TW_d = (W_1)(E_d) + (W_2)(N_d) + (N)(W_{2d}), \qquad (2)$$

where the d subscript represents the first partial with respect to denials, D. Similarly, the effect of placements on TW_p is given by

$$TW_p = (W_1)(E_p) + (W_2)(N_p) + (N)(W_{2p}). \qquad (3)$$

where the p subscript represents the first partial with respect to UI placements, P.

Now consider the effect of denials on TW. Both the exhaustee and non-exhaustee populations consist of valid and invalid claimants. In principle, denials affect the size of the exhaustee population only by the direct detection of invalid claimants and the deterrence of actual or potential invalid claimants.

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[2] Holen and Horowitz have argued that W_1 is sensitive to the level of unemployment, since "liberality of the system" may increase as market conditions warrant in the judgement of system officials. Our approach ignores this effect and may introduce bias to the extent that D or P are systematically related to the level of unemployment and, through it, to W_1.

If an undetected invalid claimant is likely to become an exhaustee, then the direct effect of one denial is to reduce the exhaustee population by one and increase the non-exhaustee population by the same amount, since anyone who does not succeed in becoming an exhaustee is by definition a non-exhaustee. Since the deterrent effect keeps both claimants and non-claimants from becoming exhaustees, it too will reduce the exhaustee population. Thus, to the extent that there is any deterrent effect of denials, either on current claimants or non-claimants, E, the change in exhaustees due to a UI denial, will be less than -1 (i.e., have a larger negative value). Furthermore, if the deterrent effect operates only on potential exhaustees, N_d will be positive and exactly equal to $-E_d$. If, however, non-claimants are also deterred, N_d could very well be negative (where N_d is the change in non-exhaustee due to a denial). In other words, depending on whether non-claimants are also deterred, denials could either reduce or leave unchanged the total claimant population. Given the evidence of previous studies our expectation is that the total population is reduced, i.e., that N_d is indeed negative.

The sign of W_{2d}, the change in average duration of claims for non-exhaustees due to denials, is also dependent on the mix of individuals denied claims. For example, if most denials tend to move people from exhaustee to non-exhaustee status, and these individuals are detected later than the average duration for the rest of the non-exhaustee population, the effect of denials could be to increase the average duration of non-exhaustee claims. The net effect of denials on total weeks, however, must be negative since even with no deterrent effect at all, denials should reduce the average duration of all claims.

Now consider the effect of placements. Since we do not have any theoretical basis for attributing a deterrent effect to placements, our expectation is that placements will not affect the total claimant population. Once an individual claim is approved, it is counted as part of the claimant population regardless of when the individual is placed. Consequently, placements can only affect total weeks in two ways: by changing the exhaustee-non-exhaustee mix, and thus,the weights of the duration variables; and by changing the average duration of claims for non-exhaustees. In other words, placements may reduce the exhaustee population (E_p may be negative), but the individuals placed will simply be counted as non-exhaustees (N_p will be positive and equal to $-E_p$). Whether or not there is any reduction of the exhaustee population by placements depends on the propensity of individuals likely to be placed to find jobs on their own if not placed prior to exhausting their benefits. We would expect that individuals with good chances of finding jobs on their own would also be more likely to be placed, so our expectation is that E_p should be relatively small. This means, however, that the most important effect of placements is in shortening claim durations for non-exhaustees. That is W_{2p} should be negative.

The table below summarizes our prior expectations for components of equations (2) and (3).

Partial Effect	TW_d	E_d	N_d	W_{2d}	TW_p	E_p	N_p	W_{2p}
Expected Value	(-)	(< -1)	(+,-)	(+,-)	(-)	no effect	no effect	(-)

Note that we expect both placements and denials to reduce total claimant weeks, but through fundamentally different mechanisms.

The determinants of E, N and W_2 are estimated from cross-section data, by state, for FY 1974. The exhaustee population, E, will depend on the maximum claim weeks (P wks) allowed (since, ceteris paribus, an individual will be less likely to exhaust a longer maximum than a shorter one); on the dollar benefit value relative to state average weekly earnings (R), which is a measure of the attractiveness of collecting claims as opposed to working; on an index of labor market opportunities (LM), and finally on denials and placements, although as mentioned above, we do not expect the latter variable to have a large effect. We have already labeled denials and placements as D and P. The following econometric equations are the specifications estimated:

$$E = a_0 + a_1 \text{ P wks} + a_2R + a_3 LM + a_4D + a_5P + u \quad (4)$$

The non-exhaustee population, N, is likewise dependent on P wks, R, LM and D. And although we expect the effect to be small, P should also be included to test our expectations. The general form for estimation is

$$N = b_0 + b_1 \text{ P wks} + b_2R + b_3LM + b_4D + b_5P + v \quad (5)$$

The average claim duration for non-exhaustees, W_2, should have a similar specification. Maximum potential weeks is included since a longer maximum, ceteris paribus, reduces the likelihood of individuals being in the exhaustee population thereby increasing the number of non-exhaustees with relatively longer claim spells. Hence,

$$W_2 = c_0 + c_1 \text{ P wks} + c_2R + c_3LM + c_4D + c_5P + W_1 + z \quad (6)$$

All the variables included in the equations (4), (5) and (6) are readily observable from either published Employment Service or UI documents on a state by state basis. The statistical error terms are denoted by u, v, and z respectively.

The following Glossary identifies and defines the variables employed in the estimations. (Note that R = B$/Sal and LM is controlled for by the use of Insem and Nuiun.)

GLOSSARY

VARIABLE DESCRIPTIONS, DERIVATIONS AND SOURCES

Variable	Description and Derivation	Source
B$/Sal	State Weekly UI Benefit for FY 1974 times 52 divided by State Average Annual Salary for 1974	UI Statistics, Table 8 FY 1974 BPF Worksheets
Exh	Those exhausting claims during FY 1974 (final payments)	UI Statistics, Table 8
Insem	Average Insured Employment. Insured Unemployment divided by Rate	UI Statistics, Table 2
Neb	Total UI beneficiaries minus exhaustees, FY 1974	derived
Nuiun	New spells of Insured Unemployment, FY 1974	UI Statistics, Table 13
Othden	Total Denials minus Denials for Refusal to Work, FY 1974	UI Statistics, Table 13
Pwks	Potential Duration of Insured Claims, FY 1974 Average	UI Statistics, Table 8
Tben	Total UI beneficiaries = Total benefit weeks divided by average duration of benefits, FY 1974	UI Statistics, Table 8
Tew	Exhaustee weeks = Those exhausting claims times average duration of exhausted claims, FY 1974	UI Statistics, Table 8
Tnew	Twks - Tew	derived
Twks	Total benefit weeks = weekly average beneficiaries, FY 1974, times 52	UI Statistics, Table 8
Uidr	Number denied UI claims for refusal of suitable work, FY 1974	UI Statistics, Table 13
Uipl	UI claimants placed by ES during FY 1974	FY 1974 BPF Worksheets

3.0 EMPIRICAL RESULTS

The relationships specified in Section 2.0 were tested by using linear regression analysis, applied to FY 1974 data for 49 states (not all data were available for Alaska), the District of Columbia and Puerto Rico. The first equations specified were those involving total UI beneficiaries, exhaustees and non-exhaustees, shown in Table 1.

As indicated in Section 2.0, the equations include several variables needed to establish the appropriate ceteris paribus conditions. These include average potential claim eligibility for each state (P wks), the ratio of weekly claim benefits to state average weekly salary, R = (B$/Sal) and two variables to reflect labor market conditions (LM) in the state: insured employment (Insem) and new spells of insured unemployment (Nuiun). The equations were also run without Insem, both because the variables Insem and Nuiun are highly correlated (both depend heavily on the size of the state), and because Insem has such a small t - statistic.

The coefficients of principal interest, of course, are those on UI placements (Uipl) and denials for refusal of work (Uidr). The coefficients on Uipl offer something of a surprise, since we predicted that Uipl would have no significant effect on the number of beneficiaries, except perhaps to shift some claimants from exhaustee to non-exhaustee status. Instead, we find a significant (although fractional) positive coefficient in the total beneficiary and non-exhaustee equations. This result suggests the presence of a simultaneous equations specification problem[3] which leads us to measure the effect of increased numbers of beneficiaries on Uipl. Because these equations hold employment conditions constant, it is quite probable that a

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[3] Note that the difficulty here is expressed as one of simultaneous equations "specification" rather than of "bias". Because the value of R^2 is so high in these equations, there can be little bias in the coefficients. However, a fundamental simultaneous equations problem is that of determining the relationship which is being estimated; for example, does an equation estimating the ceteris paribus relationship between prices and quantities estimate the supply curve or the demand curve. Interpretation of the final result must depend on economic theory. (See Rao and Miller, Applied Econometrics, pp. 185-201 for a cogent discussion of these points).

TABLE I

THE IMPACT OF UI PLACEMENTS AND DENIALS FOR REFUSAL OF WORK
ON
THE NUMBER OF UI EXHAUSTEES, NON-EXHAUSTEES AND TOTAL BENEFICIARIES

Across States During FY 1974

(t - statistics in parentheses)

$\bar{R}^2$

(a) Holding constant new spells of insured unemployment and average insured employment

$$\text{Tben} = \underset{(0.41)}{-13144} - \underset{(0.39)}{487.8\ \text{Pwks}} + \underset{(1.66)}{150446\ \text{B\$/Sal}} + \underset{(19.3)}{0.432\ \text{Nuiun}}$$

$$+\underset{(0.96)}{0.446\ \text{Insem}} + \underset{(2.38)}{0.749\ \text{Uipl}} - \underset{(3.53)}{14.58\ \text{Uidr}} \qquad .985$$

$$\text{Exh} = \underset{(1.90)}{42342} - \underset{(1.92)}{1652\ \text{Pwks}} + \underset{(.005)}{284.8\ \text{B\$/Sal}} + \underset{(8.66)}{.134\ \text{Nuiun}}$$

$$-\underset{(0.24)}{.000775\ \text{Insem}} + \underset{(0.97)}{0.211\ \text{Uipl}} - \underset{(2.59)}{7.39\ \text{Uidr}} \qquad .900$$

$$\text{Neb} = \underset{(2.22)}{-55486} + \underset{(1.21)}{1164\ \text{Pwks}} + \underset{(2.11)}{150161\ \text{B\$/Sal}} + \underset{(17.3)}{0.298\ \text{Nuiun}}$$

$$+\underset{(1.45)}{.00524\ \text{Insem}} + \underset{(2.21)}{0.538\ \text{Uipl}} - \underset{(2.25)}{7.19\ \text{Uidr}} \qquad .983$$

(b) Holding constant new spells of insured unemployment only

$$\text{Tben} = \underset{(0.43)}{-13350} - \underset{(0.28)}{350.4\ \text{Pwks}} + \underset{(1.61)}{145371\ \text{B\$/Sal}} + \underset{(20.5)}{0.438\ \text{Nuiun}}$$

$$+\underset{(3.13)}{0.883\ \text{Uipl}} - \underset{(3.41)}{13.65\ \text{Uidr}} \qquad .985$$

$$\text{Exh} = \underset{(1.92)}{42465} - \underset{(1.98)}{1676\ \text{Pwks}} + \underset{(0.02)}{1166\ \text{B\$/Sal}} + \underset{(9.06)}{.133\ \text{Nuiun}}$$

$$+\underset{(0.97)}{0.188\ \text{Uipl}} - \underset{(2.75)}{7.55\ \text{Uidr}} \qquad .902$$

$$\text{Neb} = \underset{(2.23)}{-56315} + \underset{(1.37)}{1326\ \text{Pwks}} + \underset{(2.04)}{144206\ \text{B\$/Sal}} + \underset{(18.2)}{0.305\ \text{Nuiun}} \qquad .983$$

$$+\underset{(3.15)}{0.695\ \text{Uipl}} - \underset{(3.15)}{6.11\ \text{Uidr}}$$

ceteris paribus increase in the UI beneficiary pool could increase UI placements.

The coefficients on the variable Uidr are substantially more consistent with the predicted relationships, although the size of the coefficient is somewhat surprising. They indicate that an additional UI denial for refusal to work reduces the total beneficiary population by 13½ to 14½ individuals, with that reduction being almost equally divided between exhaustees (Exh) and non-exhaustees (Neb). The implications of this result are obviously substantial, since they suggest that Employment Service enforcement activities can be extremely productive: the detection of one additional individual can deter as many as 13 others from filing claims (presumably invalid), at least half of which would have become benefit exhaustees.

This result is also somewhat surprising, since it appears to be at variance with the deterrent effect calculated by Holen and Horowitz[4], who found that UI denials only have a deterrent factor of 2. One explanation of the difference between these estimates is methodological. Holen and Horowitz made their estimates using denials for all reasons, including voluntary quits, firings for misconduct and non-availability for work. Since denials for refusal of work represent only about 2% of all denials, there is substantial room for this category to have a "larger" deterrent ratio than the others.

In addition to predicting originally that UI denials would reduce the beneficiary population, we also predicted that they would tend to shift at least one individual per denial from exhaustee status to non-exhaustee status. (The assumption was that the individuals detected as not seeking work would otherwise exhaust their benefits). It was also suggested that UI placements might have a similar effect. This effect is not apparent in Table I, since the coefficients indicate that denials reduce both exhaustee and non-exhaustee populations, while placements are at least positively correlated with both. In order to detect the shift effect, therefore, it is necessary to hold the beneficiary population constant. This exercise was performed by adding total beneficiaries as an independent variable to the equations for exhaustees and non-exhaustees. These estimated equations are found in Table II.

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[4] Op. Cit. It might be thought that our variable Uidr is actually picking up the effect of other UI denials, and is thus overinflated. In fact, it is not. Regressions including that variable differ only slightly from those reported here, and since the overwhelming majority of those denials occur in determining initial eligibility, we decided not to include them in this discussion. See section 5.0 .for details.

Although the coefficients of both placements and denials are not statistically significant, they do at least have the predicted signs, with values indicating that an additional UI placement shifts perhaps 0.1 to 0.2 individuals from exhaustee to non-exhaustee status. An additional denial tends to shift 1 to 1.7 individuals. Both of these ranges of values are consistent with expectations. Potential exhaustees are likely to be the most difficult to place, since their attachment to the labor market is questionable. An additional denial can shift more than one exhaustee to non-exhaustee status by "deterring" some individuals into shortening the duration of their claims.

The values estimated for Uidr also indicate that the deterrent effect of denials on non-exhaustees is somewhat larger than indicated in Table I. Since those coefficients show a net reduction in non-exhaustees of 6 to 7, including the shift of 1 or more individuals from exhaustee status, the gross deterrence of non-exhaustees must be more in the range of 7 to 8.

The results of Tables I and II, while powerfully suggestive, do not answer one important question. what do these effects imply with respect to the number of weeks of benefits paid out by UI? To determine this, it is necessary to reestimate the equations of Table I using weeks of benefits as the dependent variable rather than individuals. This was done, with the results shown in Table III.

The results (Table III) with respect to the coefficients of both Uipl and Uidr are, initiatlly at least, somewhat confusing. Both have negative values in the total weeks equations, but the coefficient of Uipl is insignificant and the coefficient of Uidr (-56 to -60 weeks) seems quite small relative to the deterrence magnitudes estimated in Table I.

TABLE II

TRANSFER BETWEEN EXHAUSTEE AND NON-EXHAUSTEE STATUS
DUE TO
UI PLACEMENTS AND DENIALS FOR REFUSAL TO WORK

Across States During FY 1974
(t - statistics in parentheses)

(a) Impact on Exhaustees holding Beneficiaries Constant

						$\bar{R}^2$
Exh	=	48126	- 1438 Pwks	- 65912 B$/Sal	- .0562 Nuiun	
		(2.76)	(2.13)	(1.31)	(1.52)	
		-.00274 Insem	+ 0.440 Tben	- 0.118 Uipl	- 0.972 Uidr	.939
		(1.08)	(5.42)	(0.66)	(0.39)	
	=	48386	- 1526 Pwks	- 60980 B$/Sal	- .0545 Nuiun	
		(2.77)	(2.28)	(1.22)	(1.47)	
		+0.427 Tben	- 0.189 Uipl	- 1.71 Uidr		.939
		(5.31)	(1.13)	(0.70)		

(b) Impact on Non-Exhaustees holding Beneficiaries Constant

Neb	=	-48126	+ 1438 Pwks	+ 65912 B$/Sal	+ .0562 Nuiun	
		(2.76)	(2.13)	(1.31)	(1.52)	
		+.00274 Insem	+ 0.560 Tben	+ 0.118 Uipl	- 0.972 Uidr	.992
		(1.08)	(6.89)	(0.66)	(0.39)	
	=	-48386	+ 1526 Pwks	+ 60980 B$/Sal	+ .0545 Nuiun	
		(2.77)	(2.28)	(1.22)	(1.47)	
		+0.573 Tben	+ 0.189 Uipl	+ 1.71 Uidr		.992
		(711)	(1.13)	(0.70)		

TABLE III

THE IMPACT OF UI PLACEMENTS AND DENIALS FOR REFUSAL OF WORK ON THE NUMBER OF WEEKS OF UNEMPLOYMENT COMPENSATION PAID

Across States During 1975
(t - statistics in parentheses)

(a) Total weeks paid to all beneficiaries, insured employment and/or total new spells of insured unemployment constant

$$\bar{R}^2$$

$$\text{Twks} = \underset{(0.54)}{-380862} + \underset{(0.38)}{10347\ \text{Pwks}} + \underset{(0.37)}{729054\ \text{B\$/Sal}} + \underset{(12.7)}{6.13\ \text{Nuiun}}$$

$$+ \underset{(0.21)}{.0213\ \text{Insem}} - \underset{(0.21)}{1.40\ \text{Uipl}} - \underset{(0.68)}{60.68\ \text{Uidr}} \qquad .966$$

$$= \underset{(0.55)}{-384235} + \underset{(0.41)}{11003\ \text{Pwks}} + \underset{(0.36)}{704811\ \text{B\$/Sal}} + \underset{(13.4)}{6.16\ \text{Nuiun}}$$

$$\underset{(0.13)}{-0.76\ \text{Uipl}} - \underset{(0.65)}{56.25\ \text{Uidr}} \qquad .967$$

(b) Total weeks paid to exhaustees, insured employment and/or total new spells of insured unemployment constant

$$\text{Tew} = \underset{(0.23)}{123100} - \underset{(0.36)}{7447\ \text{Pwks}} + \underset{(0.27)}{409649\ \text{B\$/Sal}} + \underset{(7.95)}{2.99\ \text{Nuiun}}$$

$$\underset{(0.10)}{-.00749\ \text{Insem}} + \underset{(0.58)}{2.99\ \text{Uipl}} - \underset{(1.80)}{121.9\ \text{Uidr}} \qquad .896$$

$$= \underset{(0.24)}{124286} - \underset{(0.38)}{7678\ \text{Pwks}} + \underset{(0.28)}{418168\ \text{B\$/Sal}} + \underset{(8.36)}{2.91\ \text{Nuiun}}$$

$$\underset{(0.60)}{+2.76\ \text{Uipl}} - \underset{(1.89)}{123.5\ \text{Uidr}} \qquad .897$$

(c) Total weeks paid to non-exhaustees, insured employment and/or new spells of insured unemployment constant

$$\text{Tnew} = \underset{(1.99)}{-503961} + \underset{(1.82)}{17794\ \text{Pwks}} + \underset{(0.45)}{319406\ \text{B\$/Sal}} + \underset{(18.4)}{3.21\ \text{Nuiun}}$$

$$\underset{(0.79)}{+0.288\ \text{Insem}} - \underset{(1.78)}{4.39\ \text{Uipl}} + \underset{(1.90)}{61.24\ \text{Uidr}} \qquad .987$$

$$= \underset{(2.02)}{-508521} + \underset{(1.93)}{13681\ \text{Pwks}} + \underset{(0.41)}{286643\ \text{B\$/Sal}} + \underset{(19.5)}{3.25\ \text{Nuiun}}$$

$$\underset{(1.60)}{-3.53\ \text{Uipl}} + \underset{(2.15)}{67.21\ \text{Uidr}} \qquad .987$$

Separating the data into exhaustee (Tew) and non-exhaustee weeks (Tnew) allows us to identify the source of the problem. First, the coefficient of Uipl is positive. although not statistically significant, in the exhaustee equation and nearly significantly negative in the non-exhaustee equation. The positive coefficient is unquestionably a result of the latent simultaneous equations specification. Again, since we know that if UI placements have any effect on exhaustees, it is to shift individuals from exhaustee to non-exhaustee status (Table II indicates that this effect is small). The marginal effect of placements on exhaustee weeks must be zero or negative. However, a ceteris paribus increase in exhaustee weeks could lead to an increase in the number of placements, by increasing opportunities for ES to find potential exhaustees employment (with labor market conditions held constant). Thus, we must conclude that the effect of UI placements is truly reflected only by the equation on non-exhaustee weeks, with the total weeks equation affected by the simultaneous equations problem with exhaustee weeks.

A similar situation occurs with respect to the coefficients on Uidr. In the exhaustee weeks equation, the coefficient has the expected sign and magnitude, while in the non-exhaustee weeks equation, the coefficient is significantly positive and relatively large. The sign of the coefficient in the non-exhaustee weeks equation is not itself totally disturbing, but the value is.

Our theoretical prediction was that denials would shift one or more individuals to non-exhaustee status. If these individuals are shifted relatively late during the claim period, they could actually lead to a net increase in non-exhaustee weeks. However, our equations in Tables I and II indicate that only 1 or 2 individuals are shifted for each denial, and an additional 7 to 9 potential non-exhaustees are deterred. If, for example, 2 individuals are shifted from exhaustee into non-exhaustee status, there could be a gain of 40 to 50 non-exhaustee weeks, assuming the shift occurs late in the claim.

However, if 8 or 9 potential non-exhaustees are deterred from claiming the average of about 9½ weeks for non-exhausting claims, this would reduce non-exhaustee weeks by 76 to 86 weeks, for a net reduction of 26 to 46 weeks. The average non-exhaustee claim deterred by denials would have to be 6 weeks or less for the coefficient to be positive, and a positive value of the magnitude observed seems most implausible. Thus, again, simultaneous equations specification appears to be the problem.

In this case, however, we do not have a firm theoretical prediction for the coefficient of Uidr in the non-exhaustee weeks equation in the absence of simultaneous equations bias. We do, however, have a mechanism for attacking it in the form of the equations found in Table IV. In these equations, total non-exhaustee weeks are specified as before, but now both non-exhaustees and exhaustees are held constant. This precludes measurement of a shift from exhaustee to non-exhaustee status as well as holding the number of beneficiaries constant. Interestingly, both the coefficients of Uipl and Uidr increase in absolute value, with the former more negative than before and the latter substantially more positive.

Interpretation of these changes is quite straightforward. In both cases we have removed the effects both of changes in the size of the beneficiary population and shifts between exhaustee and non-exhaustee status. If placements cause such a shift, and/or have an "attractiveness" coefficient as discussed earlier, the negative impact of placements would be correspondingly weaker than when these effects are controlled for. This is what we seem to observe.

In the case of the coefficient of Uidr, however, the interpretation is somewhat different. Total beneficiaries and shifts between categories are held constant. But now we are perforce measuring the effect of increases in the duration of non-exhaustee claims on denials. The relationship implied by the coefficient is, roughly, that an increase in duration of 100 weeks (holding beneficiaries and market conditions constant) increases denials by 1, a not implausible result, since Employment Service and UI obviously have somewhat more time to detect and process the claims eligible for denial.

TABLE IV

IMPACT OF HOLDING EXHAUSTEES AND NON-EXHAUSTEES CONSTANT
ON
RELATIONSHIP BETWEEN NON-EXHAUSTEE WEEKS AND UI PLACEMENTS AND DENIALS

(a) Total weeks paid to non-exhaustees, exhaustees and non-exhaustees held constant

$$
\begin{aligned}
&&&\bar{R}^2\\
\text{Tnewui} &= \underset{(2.23)}{-596406} + \underset{(2.24)}{22364\ \text{Pwks}} + \underset{(0.24)}{173963\ \text{B\$/Sal}} + \underset{(4.59)}{2.46\ \text{Nuiun}} &&\\
&\quad + \underset{(0.73)}{.0265\ \text{Insem}} + \underset{(2.07)}{3.44\ \text{Exh}} + \underset{(0.65)}{0.962\ \text{Neb}} - \underset{(2.20)}{5.63\ \text{Uipl}} &&\\
&\quad + \underset{(2.63)}{93.59\ \text{Uidr}} && .987\\
&= \underset{(2.21)}{-586614} + \underset{(2.30)}{22832\ \text{Pwks}} + \underset{(0.15)}{110830\ \text{B\$/Sal}} + \underset{(4.57)}{2.43\ \text{Nuiun}} &&\\
&\quad + \underset{(2.07)}{3.42\ \text{Exh}} + \underset{(0.82)}{1.19\ \text{Neb}} - \underset{(2.09)}{5.00\ \text{Uipl}} + \underset{(2.93)}{100.29\ \text{Uidr}} && .988
\end{aligned}
$$

(b) Total weeks paid to non-exhaustees, total beneficiaries held constant

$$
\begin{aligned}
&&&\bar{R}^2\\
\text{Tnewui} &= \underset{(1.93)}{-476963} + \underset{(1.97)}{18795\ \text{Pwks}} + \underset{(0.01)}{10375\ \text{B\$/Sal}} + \underset{(4.42)}{2.32\ \text{Nuin}} &&\\
&\quad + \underset{(0.55)}{.0197\ \text{Insem}} + \underset{(1.78)}{2.05\ \text{Tben}} - \underset{(2.32)}{5.93\ \text{Uipl}} + \underset{(2.55)}{91.2\ \text{Uidr}} && .987\\
&= \underset{(1.95)}{-478828} + \underset{(2.07)}{19432\ \text{Pwks}} - \underset{(0.04)}{25010\ \text{B\$/Sal}} + \underset{(4.44)}{2.31\ \text{Nuiun}} &&\\
&\quad + \underset{(1.90)}{2.14\ \text{Tben}} - \underset{(2.30)}{5.42\ \text{Uipl}} + \underset{(2.83)}{96.5\ \text{Uidr}} && .988
\end{aligned}
$$

TABLE IV (Con't)

(c) Total weeks paid to exhaustees, exhaustees and non-exhaustees held constant

$$
\begin{aligned}
\text{Tewui} &= \underset{(4.00)}{-856101} + \underset{(3.75)}{30004\ \text{Pwks}} + \underset{(0.89)}{517205\ \text{B\$/Sal}} + \underset{(0.44)}{0.191\ \text{Nuiun}} \\
&\quad + \underset{(0.47)}{.0136\ \text{Insem}} + \underset{(16.6)}{22.1\ \text{Exh}} - \underset{(0.64)}{0.758\ \text{Neb}} - \underset{(0.62)}{1.28\ \text{Uipl}} \\
&\quad + \underset{(1.27)}{36.1\ \text{Uidr}} \qquad .986 \\
&= \underset{(4.02)}{851056} + \underset{(3.82)}{30245\ \text{Pwks}} + \underset{(0.85)}{484678\ \text{B\$/Sal}} + \underset{(0.41)}{0.175\ \text{Nuiun}} \\
&\quad + \underset{(16.8)}{22.1\ \text{Exh}} - \underset{(0.55)}{0.640\ \text{Neb}} - \underset{(0.50)}{0.950\ \text{Uipl}} + \underset{(1.45)}{39.55\ \text{Uidr}} \qquad .986
\end{aligned}
$$

(d) Total weeks paid to exhaustees, total beneficiaries held constant

$$
\begin{aligned}
\text{Tewui} &= \underset{(0.55)}{245517} - \underset{(0.17)}{2904\ \text{Pwks}} - \underset{(0.77)}{991548\ \text{B\$/Sal}} - \underset{(1.16)}{1.096\ \text{Nuiun}} \\
&\quad - \underset{(0.76)}{0.491\ \text{Insem}} + \underset{(4.50)}{9.31\ \text{Tben}} - \underset{(0.87)}{3.99\ \text{Uipl}} + \underset{(0.22)}{13.86\ \text{Uidr}} \qquad .928 \\
&= \underset{(0.57)}{250176} - \underset{(0.27)}{4493\ \text{Pwks}} - \underset{(0.71)}{903187\ \text{B\$/Sal}} - \underset{(1.13)}{1.065\ \text{Nuiun}} \\
&\quad + \underset{(4.46)}{9.09\ \text{Tben}} - \underset{(1.24)}{5.26\ \text{Uipl}} + \underset{(0.01)}{0.63\ \text{Uidr}} \qquad .928
\end{aligned}
$$

This result also suggests that the net effect of an additional denial on non-exhaustee weeks due to shifts from exhaustee status and deterrence of non-exhaustees is negative, since the positive coefficient of denials is substantially smaller when these effects are allowed full sway (equation set III (c)). This difference, however, is probably not statistically significant, since the coefficients in III (c) and IV (a) are within one standard error of each other. Nevertheless, the implied coefficient on non-exhaustee weeks of these combined effects is -32½ to -33 non-exhaustee weeks, values which fit very comfortably into the range determined earlier.

We also ran regressions on Tnew holding total beneficiaries constant to see if it was possible to measure the separate impact of the shift from exhaustee to non-exhaustee status caused by denials. These results are shown in equation set IV (b), and are not very conclusive. The effect of the shift should be to raise the coefficients of Uidr to some value higher than those found in IV (a), since the shift should add weeks to the non-exhaustee category. In fact, the coefficients were reduced slightly, although very insignificantly. One implication of this result is that the direct effect of a denial is to cause a shift to non-exhaustee status very early in the claim period. This conclusion, however, could be substantiated by direct inspection of actual claim histories of individual denials.

The final set of regressions in Table IV were run to test the internal consistency of our results. In set IV (c), we tested for potential simultaneous equations bias on the coefficient of Uidr in the original exhaustee weeks equation (Equation set III(b)). The coefficients of Uidr in IV (c) indicate that there may be some positive (although only marginally significant) correlation between the length of the exhaustee claim period (Neb and Exh constant) and the number of denials, with 36 to 40 additional exhaustee weeks claimed leading to an additional denial. This implies that the number of weeks saved by denying and deterring potential exhaustees may be more in the range of 155 to 160 weeks, rather than the 120 weeks or so originally calculated. The size of the t - statistics in IV (c), however, supports some caution in relying very heavily on this conclusion.

Combining regression set IV (c) with set IV (d), we obtain one final result of interest. If we subtract the coefficient of Uidr in IV (d) from the corresponding coefficient in IV (c) and divide through by the number of exhaustees estimated to be shifted in each case (equation set II (a)), we find the implied reduction in exhaustee weeks to be about 23 weeks per individual in each case. Most of the coefficients involved are very insignificant, but the results are reasonable. One implication is that our entire equation system is at least internally consistent; perhaps a more important implication is that when a potential exhaustee is denied a claim, the saving is close to the maximum amount of the claim. (In our sample, the average duration of exhaustee claims is 23.8 weeks). In other words, it appears that when claims are denied, they are denied within the first one or two weeks of the claim.

Table V summarizes the coefficient estimates for denial impact, including the estimates of specification bias, and shows derived estimates of the shift and total deterrence effects net of bias. Only the estimates for the equations with the insured employment variable are shown, since the results without this variable do not differ appreciably from those shown. Column (1) shows the unconstrained estimates of deterrent effects and column (2) shows the results when the beneficiary population is held constant. Column (3) shows the results in the exhaustee and non-exhaustee weeks equations when the exhaustees and non-exhaustees are held constant in both equations. Since the denial coefficient in these equations would theoretically be zero if we were estimating a pure deterrence relationship, we interpret these numbers as the net coefficients of a "policing rate". As such they also serve as estimates of the bias on our deterrence relationship coefficients. Subtractin these bias figures from the net and total coefficient estimates yields our derived estimates of the respective denial impacts on claimant weeks in columns (4) and (5).

TABLE V

SUMMARY OF COEFFICIENTS ON UIDR, PROBABLE BIASES AND DERIVED ESTIMATES OF DENIAL IMPACT ON CLAIM WEEKS

Dependent Variable	Estimated Coefficients[a]			Derived Estimates	
	Estimate of Total Effect (1) (Unconstrained Tables I, III)	Estimate of Shift Effect (2) Beneficiary Pop. Constant (II, IV)	Estimate of Specification Bias (3) Non-exh. & Exh. Constant (Table IV)	(4) Derived Shift Effect/Net of Bias[b]	(5) Total Effect Net of Bias[c]
Total Beneficiaries	-14.6 (3.5)	--	--	--	-14.6
Exhaustees	-7.4 (2.6)	-1.0 (0.4)	--	-1.0	-7.4
Non-Exhaustees	-7.2 (2.3)	+1.0 (0.4)	--	+1.0	-7.2
Total Weeks	-60.7 (0.7)	105.1 (1.8)	129.7 (2.1)	-24.6	-190.4
Total Exhaustee Weeks	-121.9 (1.8)	13.9 (0.2)	36.1 (1.3)	-22.2	-158.0
Total Non-Exhaustee Weeks	+61.2 (1.9)	91.2 (2.6)	93.6 (2.6)	-2.4	-32.4

[a] t - statistics in parentheses

[b] Column two less column three

[c] Column (1) minus Column (3).

4.0 CONCLUSIONS

The foregoing Empirical Analysis permits us to draw several very strong inferences concerning the impact of both placements and UI claims denied as a result of work tests on total UI claim liabilities. In both cases, the impact is negative; and in the case of denials, there is very strong evidence of a deterrent effect significantly greater than that reported in previous work on the subject.

The data suggest that the placement of one UI claimant reduces total UI claim liabilities by around 4 weeks. There is some evidence that placement tends to affect individuals who are likely to become exhaustees much less than other individuals. In other words, the placement tends to affect primarily those individuals who are likely to become employed sooner or later anyway. On the average, these individuals become employed after about 9 weeks. Thus, the major source of claim savings from UI claimant placements is the reduction in the duration of the claim spell for the more employable claimants.

The impact of denials is more complex. Conceptually, a denial has three separate effects. First, the individual denied reduces the claim liability; second, the denial deters other individuals who are currently UI claimants from exhausting their claims; and finally, denials deter individuals who are not claimants from filing claims in the first place. The data do not allow us to determine whether individuals actually denied claims are likely to be exhaustees or not, since the coefficient designed to measure the shift from exhaustee to non-exhaustee status is not statistically significant. That coefficient does suggest that one or more individuals do not become exhaustees who otherwise would have. The evidence is that one denial deters around 13½ additional claimants from ever becoming beneficiaries, and that 6 or 7 of those deterred would probably have exhausted claims, while the remainder would have had shorter claims.

The estimated net effect of a denial on claimant weeks ranges from about 120 to as many as 190 weeks. The lower figure is derived from the coefficients on unconstrained exhaustee weeks in Table III. The higher figure includes the estimated net impact on non-exhaustee weeks derived from combining equation sets III (c) and IV (a) and the possible downward bias on exhaustee weeks detected in equation set IV (c). Both of these results are not sufficiently significant to rely on; but when they are combined with the fact that at least 6 potential exhaustees are deterred at an average saving of 24 weeks, we find that a total savings of about 150 claimant weeks is not an unreasonable estimate.

In order to improve our understanding of the impact of denials, we clearly need better information on claimant populations. In particular, the point at which a claim denial occurs, demographic and occupational characteristics of exhaustees and non-exhaustees, and distributions of non-exhaustees over claim durations all would vastly improve our ability to define and explain these effects. Nevertheless, while there are ambiguities in the range of results estimated, even the most conservative estimate is much different than the factor of two arrived at by Holen and Howowitz. However, it should be noted that the magnitudes of the denial variables employed in their study (2.8 million) differ by an order of 45-50 from ours, since this analysis is restricted to only denials due to refusals to accept suitable work (61,000 in FY 1974). Therefore, our estimates of deterrent effects when viewed in that context may actually be more conservative than those of Holen and Horowitz. These findings suggest that the topic of deterrence is critical to a full understanding of the value of Employment Service enforcement activities.

5.0 (Appendix)

As noted in section 3.0 of our analysis, there was a possibility that the large deterrent value we found to be associated with UI denials due to refusal of work could actually be the result of denials for other causes by UI. The argument would run that if a state is relatively tough on one type of denial, it would tend to be tougher on others as well. Thus, an independent variable which concentrates on only one denial type and was positively correlated with others could have a relatively inflated coefficient.

In fact, this does not appear to be the case in these regressions. In order to test for this possible effect, we ran additional regressions including a variable measuring all other UI denials (voluntary quits, misconduct, and not available). These are included in the accompanying Appendix Table A and reveal that the coefficient of other denials is generally insignificant (although behaving much like Uidr) and had very little effect on the results we report in the text.

Appendix Table 5.1

IMPACT OF UI PLACEMENTS AND DENIALS FOR REFUSAL OF WORK
Across States During 1974, Including Other Denials

									$\bar{R}^2$
Tben	=	-4042	-	793 Pwks	+	143665 B$/Sal	+	0.456 Nuiun	
		(0.12)		(0.60)		(1.57)		(10.95)	
		+.00430 Insem	+	0.823 Uipl	-	13.81 Uidr	-	0.162 Othden	.984
		(0.92)		(2.47)		(3.22)		(0.72)	
Twks	=	-233666	+	5403 Pwks	+	619388 B$/Sal	+	6.54 Nuin	
		(0.31)		(0.19)		(0.31)		(7.21)	
		.0187 Insem	-	0.203 Uipl	-	48.2 Uidr	-	2.62 Othden	.965
		(0.18)		(0.03)		(0.52)		(0.54)	
Exh	=	37221	-	1480 Pwks	+	4100 B$/Sal	+	0.119 Nuin	
		(1.54)		(1.61)		(0.06)		(4.13)	
		-.00068 Insem	+	0.170 Uipl	-	7.82 Uidr	+	0.091 Othden	.898
		(0.21)		(0.17)		(2.82)		(0.59)	
Tew	=	174138	-	9161 Pwks	+	371624 B$/Sal	+	3.07 Nuin	
		(0.30)		(0.42)		(0.24)		(4.44)	
		-.00840 Insem	+	3.40 Uipl	-	117.6 Uidr	-	0.908 Othden	.894
		(0.11)		(0.62)		(1.66)		(0.24)	
Neb	=	-41263	+	687 Pwks	+	139564 B$/Sal	+	0.338 Nuin	
		(1.56)		(0.68)		(2.01)		(10.67)	
		.00499 Insem	+	0.654 Uipl	-	5.99 Uidr	-	0.253 Othden	.984
		(1.40)		(2.59)		(-1.84)		(1.49)	
Tnew	=	-407804	+	14565 Pwks	+	247765 B$/Sal	+	3.48 Nuin	
		(1.50)		(1.41)		(0.35)		(10.7)	
		0.271 Insem	-	3.61 Uipl	+	69.39 Uidr	-	1.710 Othden	.987
		(0.74)		(1.39)		(2.08)		(0.98)	

APPENDIX E

SOME EVIDENCE ON THE CHARACTERISTICS OF DISQUALIFIED UI CLAIMENTS

As discussed in Chapter 4 and Appendix D, the detection and deterrence of invalid UI claims due to refusal of suitable work represents a significant ES output. The deterrence effect appears to be especially strong. Our analysis indicates that in FY 1974, the detection of an additional invalid claim influenced as many as 13 other individuals to either not apply at all for UI or to terminate their claims before they exhausted their benefits.

Given these facts, it is important to know something about the invalid claimants who are detected or deterred from filing. Direct information on individuals deterred is virtually impossible to obtain, of course. It is doubtful that we could expect to sample the population of those not applying to UI and find any significant number of individuals who would state that they would have applied except for the fact that they feared being caught chiseling.* However, it is not unreasonable to assume that those deterred are probably very similar to invalid claimants actually detected, with the possible exception that some deterrence may take the form of not becoming unemployed in the first place. (The line between a layoff and a quit is not always as clear-cut as the statistical definitions indicate).

Concentrating on individuals detected as representative of those filing invalid claims, or who would file if not deterred, there are several questions of interest. These include:

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* This problem has been discussed by Stevens (1966) in relation to the difference between actual and hypothetical invalid claimants.

- What is the benefit experience of detectees? On average, are they eligible for the same weekly benefit amounts, and for the same payment periods as those not disqualified?

- At what point during the benefit eligibility period are the disqualified detected? Is this experience uniform across states?

- What are the personal characteristics of detectees? Are they more predominantly women? Younger or older workers? Married or single?

- What happens to those who are disqualified after the disqualification? Do they leave the labor force? Find a job right away? Remain unemployed?

The answers to these questions cannot be made definitively, since there are no known national studies which provide us with a comprehensive analysis of disqualified UI beneficiaries. A small number of individual states, however, have performed studies of the disqualified over the last 15 years which provide at least some clues.

Information found regarding each of the questions above is described in the sections which follow and include the following:

- Detectees tend to be eligible for slightly lower weekly benefit amounts (about 10%) and possibly one-half week fewer benefit weeks.

- Detection appears to occur at no consistent point during a claim. In some states, it is early, in others late. A significant number of those detected for refusing work do re-open their claims after meeting the terms of the disqualification.

- Detectees tend to include a higher proportion of women, especially married women and younger workers.

- A high proportion of detectees appear to remain unemployed during and after the disqualification period. Relatively few drop out of the labor force. The tendency to remain unemployed appears to be sensitive to the type of disqualification (waiting period, earnings requirement) imposed.

The evidence supporting these findings is fragmentary and frequently based on experience of 15 years ago. However, it does suggest that some further work along the lines of these studies is probably needed to properly identify and measure the impact of the UI work test. A complete bibliography of studies reviewed is found at the end of this appendix.

Benefit Experience of Those Detected

The principal question here is whether or not individuals detected by the work test as "not willing to accept suitable work" have the same benefit eligibility (both in weeks and dollars) as the remainder of the UI beneficiary population. Of the studies we reviewed, only a few have data on the disqualified and the total or non-disqualified populations in a form which permits direct comparison of the potential duration of eligibility and the weekly benefits paid to each group. (Several other studies list eligibility and benefits paid for the disqualified, but do not include comparable data for those not disqualified).

The weekly benefit amounts derived from each of the studies where such calculation is possible are shown in Table 1. As can readily be seen, disqualified workers in general, and those disqualified for failure to seek work in particular tend to have smaller checks on average than those not disqualified. The differences are not large, however, and in one case, Tennessee in 1967, the checks of the disqualified and work refusers were slightly larger than for the average of the beneficiary population. On the whole, these figures suggest that the benefit checks of those detected by the work test are possibly as much as 10% less than those of non-disqualified UI beneficiaries, although such a conclusion must be made very tentatively in light of the scattered nature of the evidence.

TABLE 1

Weekly Benefit Amount Comparisons

		All Claimants	All Disqualified	Refusal of Suitable Work
California, CY 70	All	$ 54.83	$ 53.71	$ 48.79
(Sample Size - 7896)	Male	$ 58.78	$ 55.93	$ 52.54
	Female	$ 47.48	$ 48.09	$ 42.66
California, 10/65-9/67	All	$ 50.98	$ 50.12	
(Sample Size - 8776)	Male	$ 57.04	$ 54.31	
	Female	$ 40.36	$ 40.49	
Kansas, 9/72-8/63 (Sample Size - 6262)	All	$ 36.22*	$ 34.17	$ 32.03
Missouri, 3/64-2/65 (Sample Size - 1858)	All	-	$ 31.72	$ 30.45
Nebraska, CY 1966	All	$ 36.96	$ 34.87	-
(Sample Size - 1,331)	Male	$ 38.75	$ 37.34	-
	Female	$ 32.78	$ 31.96	-
New York, CY 1962	All	$ 37.01	$ 32.44	$ 33.06
CY 1960	All	$ 34.82	$ 31.99	$ 30.45
(10% Sample)				
South Dakota, CY 66 (Sample Size - 879	All	-	$ 32.32	$ 32.33
Tennessee, CY 1967 (Sample Size - 1412)	All	$ 31.08	$ 31.81	$ 26.00**
Tennessee, CY 1965	All	$ 27.15	$ 27.78	$ 28.77
(Sample Size - 8647)	Male	-	$ 29.67	$ 30.76
	Female	-	$ 25.65	$ 25.75

* Estimated from limited distribution.

** Sample size of those refusing work = 6.

Note: Exact data sources are described in Bibliography.

Evidence on the number of weeks of both actual and potential eligibility is even scarcer than for weekly benefit amounts. What little information is available is shown in Table 2. Only in California is a direct comparison possible between those disqualified and the average for all beneficiaries. As sketchy as these data are, they do suggest that, on average, those detected by the work test may be eligible for some fraction of a week less than the rest of the beneficiary population. But this conclusion is even more tentative than that relating to weekly benefits.

TABLE 2

Weeks of Benefit Eligibility

		All Claimants	All Disqualified	Refusal of Suitable Work
California, CY 70 (Sample Size, 7896)	All	24.4 wks.	24.1 wks.	23.8 wks.
	Male	24.6 wks	24.1 wks.	24.0 wks.
	Female	23.8 wks.	24.0 wks.	23.3 wks.
Kansas, 9/72-8/63 (Sample Size, 6262)	All	-	22.4 wks.	22.4 wks.
Tennessee, CY 67 (Sample Size, 1412)	All		23.3 wks.	21.8 wks
Tennessee, CY 65 (Sample Size, 8647)	All	-	23.2 wks.	23.2 wks.
	Male	-	23.3 wks.	23.6 wks.
	Female	-	23.1 wks.	22.7 wks.

Note: Exact data sources are described in Bibliography.

Detection Point in Benefit Period

None of the studies reviewed provides direct estimates of when during the benefit period detection and disqualification actually occur. The only evidence available is derived indirectly from the studies conducted in California, Kansas, New York and Washington.

The California data provide distributions of the precise durations of claims for all beneficiaries and the disqualified as well as somewhat less exact distributions of the number of weeks of benefits received by the disqualified after disqualification. The average number of weeks of benefits collected in California was 12.0 in 1970 and 10.2 in 1966-67. Disqualified beneficiaries averaged 8.9 weeks of benefits in 1970, of which approximately 6 weeks were received after initial disqualification (multiple disqualifications also occur). In 1966-67, disqualified beneficiaries averaged 7.1 weeks, slightly less than 5 of which were received after disqualification. Those found to be refusing suitable work drew benefits for an average of 14.1 weeks in 1970, of which about 10 weeks were drawn after the disqualification. Work refusers averaged about 9 weeks of benefits after disqualification in 1966-67.

In the three remaining states, the data are organized somewhat differently and are provided in the form of the percent of dollar benefits received after initial disqualification. These percentages are as follows:

Percent of Benefits Drawn After Initial Disqualification

New York, 1962		New York, 1960		Kansas		Washington	
All Disq.	Refuse Work	All Disq.	Refuse Work	All Disq.	Refuse Work	All Disq.	Refuse Work
39%	15%	50%	31%	83%	50%	79%	12%

On the assumption that weekly benefit amounts are the same before and after disqualification, the California data would translate to 80% of benefits after disqualification for all disqualified and 71½% for those refusing work.

Using the same assumption of constant weekly benefit amounts, it is also possible to translate the New York data into benefit weeks (benefit weeks drawn by the disqualified are not available for Kansas and Washington). In 1962, New York beneficiaries averaged 13.9 weeks. The disqualified averaged 15.2 weeks, of which 5.9 occurred after disqualification. Work refusers averaged 12.1 weeks, 3.1 after disqualification. 1960 figures for New York were: all beneficiaries, 13.3 weeks; disqualified claimants, 14.3 weeks (7.1 after disqualification); work refusers, 13.2 weeks (4.1 after disqualification).

The percentages and durations calculated from these data tend to suggest that the point of detection is highly variable. In California, and perhaps Kansas, detection of work refusal appears to have occurred fairly early -- within the first 4 to 8 weeks of a claim. In New York and Washington, the data suggest that detection occurs much later.

The large share of benefits received by work refusers after disqualification in California and Kansas also raises an interesting question regarding the operation of the work test. If these individuals actually turned down available jobs, it seems that they either would be more readily employable than others on UI, and thus likely to obtain jobs quickly or they would soon be detected again for refusing work. In either event, the longer claim durations observed for this group would be unlikely. One possible alternative explanation is that for some procedural reason, a UI claimant disqualified once for refusal of work was less likely to be detected again. This might arise either because a principal cause of disqualification was failure to report to ES, a mistake which was not repeated, or because the disqualified individual was somehow shuffled down to the bottom of ES applicant files. At this point, it is possible only to conjecture. Closer examination of what really occurs clearly would be of substantial value in analyzing the effectiveness of the work test.

Personal Characteristics of the Disqualified

In Table 3, all of the data available in the different studies on the sex and age of disqualified UI claimants in general, and of those disqualified for refusing suitable work have been transformed to a common format and tabulated. Wherever available, comparable data for the total beneficiary population are also given.

As can readily be seen from these data, individuals disqualified for refusal of suitable work tend more frequently to be female and among the younger age brackets than either claimants as a whole or the disqualified as a whole. In fact, women under 25 are generally two to four times as large a percentage of work refusers as they are of the overall claimant population. Men under 25 also tend to constitute a larger share of male refusers than of all male claimants.

This result is very consistent with the hypothesis that UI claimants who are secondary workers are more likely not to accept suitable work if available.

TABLE 3

Comparison of Personal Characteristics

% Distribution by Sex and Age

NOTE: Exact data sources are described in Bibliography

California, CY 1970 (Sample Size - 7896)

	All Beneficiaries			All Disqualified			Refusal of Work		
Age/Sex	All	Male	Female	All	Male	Female	All	Male	Female
All	100	66.5	33.5	100	64.4	35.6	100	62.3	37.7
< 25	20.6	12.9	7.7	30.1	18.8	11.3	47.3	30.3	16.9
25 - 34	25.6	18.4	7.2	28.2	19.5	8.7	15.9	13.3	2.6
35 - 54	39.8	25.4	14.4	31.8	19.0	12.9	24.9	9.3	15.6
55 +	14.0	9.8	4.2	10.0	7.1	2.8	11.9	9.3	2.6

California, 10/66-9/67 (Sample Size - 8776)

	All Beneficiaries			All Disqualified			Refusal of Work		
Age/Sex	All	Male	Female	All	Male	Female	All	Male	Female
All	100	65.8	34.2	100	56.0	44.0	100	39.4	60.6
< 25	15.5	9.4	6.1	25.2	13.5	11.7	24.5	9.6	14.9
25 - 34	25.0	17.3	7.7	26.7	16.3	10.4	18.1	8.5	9.6
35 - 54	42.6	27.5	15.1	36.1	18.7	17.4	45.7	18.1	27.6
55 +	16.4	11.6	5.3	12.0	7.5	4.5	11.7	3.2	8.5

Georgia, 6/56-7/56 (Sample Size - 1,008)

All Claimants		All Disqualified	
Male	Female	Male	Female
62%	38%	64%	36%

Kansas, 9/72-8/63 (Sample Size - 6262)

	Insured Unemployed			All Disqualified			Refusal of Work		
Age/Sex	All	Male	Female	All	Male	Female	All	Male	Female
All	100	70.0	30.0	100	60.5	39.5	100	41.3	58.7
< 25	23.5	16.2	7.3	29.5	18.6	10.9	28.6	11.5	17.0
25 - 34	21.8	15.0	6.8	28.7	17.6	11.1	34.6	15.2	19.5
35 - 54	41.1	28.0	13.1	43.0	18.0	15.0	31.3	13.1	18.2
55 +	13.6	10.8	2.8	8.8	6.3	2.5	5.5	1.5	4.0

Missouri, 3/64-2/65 (Sample Size - 1,858)

	All Disqualified			Refusal of Work		
Age/Sex	All	Male	Female	All	Male	Female
All	100	58.8	41.2	100	45.9	54.1
< 22	14.0	9.1	4.9	10.4	5.7	4.7
22 - 34	40.7	25.1	15.6	38.3	21.2	17.1
35 - 54	35.0	17.7	17.8	44.7	17.3	27.4
55 +	10.3	6.9	3.4	6.6	1.7	4.9

TABLE 3 (Continued)

Nebraska, CY 1966 (Sample Size - 1,331)

All Beneficiaries		All Disqualified	
Male	Female	Male	Female
70.1%	29.9%	54.2%	45.8%

New York, CY 1962 (10% Sample)

	All Beneficiaries			All Disqualified			Refusal of Work		
Age/Sex All	All 100	Male 58%	Female 42%	All 100	Male 50%	Female 50%	All 100	Male 32%	Female 68%
< 25	15%			23%			30%		
25 - 34	20%			22%			24%		
35 - 54	43%			37%			35%		
55 +	21%			19%			11%		

New York, CY 1969 (10% Sample)

	All Beneficiaries			All Disqualified			Refusal of Work		
Age/Sex All	All 100	Male 58%	Female 42%	All 100	Male 54%	Female 46%	All 100	Male 26%	Female 74%
< 25	14%			21%			27%		
25 - 34	21%			23%			26%		
35 - 54	43%			38%			38%		
55 +	21%			17%			9%		

Oregon, 10/62-9/63 (Sample Size - 20% of Disqualified)

	All Beneficiaries			All Disqualified			Refusal of Work		
Age/Sex All	All 100	Male 75%	Female 25%	All 100	Male 51%	Female 49%	All 100	Male 25%	Female 75%
< 25	13%	9%	4%	23%	10%	13%	23%	4%	18%
25 - 34	21%	17%	4%	25%	13%	12%	23%	5%	18%
25 - 54	47%	34½%	12½%	34%	16%	18%	43%	8%	36%
55 +	2-%	15%	5%	17%	12%	5%	11%	7%	3%

TABLE 3 (Continued)

South Dakota, CY 1966 (Sample Size - 879)

Age/Sex	All Claimants			All Disqualified		
	All	Male	Female	All	Male	Female
All	100	76.6	23.4	100	79.6	20.4
< 25				30.6		
25 - 34	(Median age = 41.4)			25.4	(Median age - 33.7)	
35 - 54				34.9		
55 +				9.0		

Tennessee, 6/67-8/67 (Sample Size - 1,412)

All Disqualified			Refusal of Work		
All	Male	Female	All	Male	Female
100	52.5	47.5	100	33.3	66.7

Tennessee, 10/63-9/64 (Sample Size - 8,647)

All Disqualified			Refusal of Work		
All	Male	Female	All	Male	Female
100	53.0	47.0	100	58.7	41.3

(Note: Only 6 individuals were disqualified for refusal of work in the 1967 sample)

Texas, CY 1962 (Sample Size = 2,066)

Age/Sex	All Claimants			All Disqualified		
	All	Male	Female	All	Male	Female
All	100	76.1	23.9	100	60.5	39.5
< 26				31.5		
26 - 35				30.7		
36 - 55				33.2		
56 +				4.6		

Washington, FY 1960 (Sample Size - 6,608)

Age/Sex	All Claimants			All Disqualified			Refusal of Work		
	All	Male	Female	All	Male	Female	All	Male	Female
All	100	74.3	25.7	100	60.8	39.2	100	15.1	84.9
< 25	13.7	9.7	4.0	22.7	13.9	8.8	24.8	3.6	21.2
25 - 34	21.0	15.9	5.1	26.5	16.5	10.0	29.3	4.6	24.7
35 - 54	45.1	32.6	12.5	37.9	21.2	16.7	37.1	3.4	33.7
55 +	20.2	16.1	4.1	12.9	9.2	3.8	8.8	3.5	5.3
(Median Age)	(41.7)	(42.2)	(40.5)	(35.4)	(35.0)	(35.8)			

Secondary workers, by definition, are not principal breadwinners and as such have a weaker attachment to the labor market. For many, collection of UI benefits while making little or no effort to find work is a "preferred" position which can only be detected through the work test.

Marital status can also have a significant impact on these decisions, since married men traditionally have the strongest labor force attachment of any group in the labor force, while married women in child-bearing years tend to have the weakest attachment. The data in Table 4 unfortunately do not allow a strong test of this hypothesis. If the proportions for all claimants in California apply even roughly to Kansas and Missouri, however, it does appear that married men tend to be under-represented among those refusing work, while married women are over-represented.

TABLE 4

Percent Distribution by Marital Status

Kansas, 9/62-8/63 (Sample Size - 4703)

Status/Sex	Insured Employment			All Disqualified			Refusal of Work		
	All	Male	Female	All	Male	Female	All	Male	Female
All	100	70.0	30.0	100	57.7	42.3	100	38.9	61.1
Single*				15.3	12.4	2.9	19.6	12.9	6.7
Married				72.4	38.8	33.6	10.0	23.0	47.0
Other*				12.3	6.5	5.8	10.4	3.0	7.4

Missouri, 3/64-2/65 (Sample Size - 1,858)

Status/Sex	All Disqualified			Refusal of Work		
	All	Male	Female	All	Male	Female
All	100	58.8	41.2	100	45.9	54.1
Single*	19.0	14.4	4.6	18.2	10.5	7.7
Married	65.1	37.2	27.9	69.0	31.5	27.5
Other*	15.9	7.2	8.7	12.8	3.9	8.9

California, CY 1970 (Sample Size - 4832)**

Status/Sex	Regular Claimants		
	All	Male	Female
All	100	66.5	33.5
Single*	20.0	14.4	5.6
Married	65.2	45.3	19.9
Other*	14.8	6.8	8.0

* Single have never been married, Other are widowed, divorced, or separated.

** No information was available on 3,064 other individuals (38.8% of sample). 66.5% of the INA group were made, 33.5% female, the same proportion as among those where marital status is known. 1966-67 distribution in California was very similar.

Note: Exact data sources are described in Bibliography.

Labor Force Status After Disqualification

Four of the State studies reviewed, Georgia, Kansas, Missouri, and Washington, specifically address this question. Three of the studies examined the labor force status of the disqualified at one specific point after disqualification: at the end of the disqualification period in Georgia, during the 8th week in Kansas (61% of disqualifications, including work refusal, were for 7 weeks) and after 5 weeks in Washington (over 80% of disqualifications were for 5 weeks, but work refusal required 5 weeks of earnings equal to the weekly benefit amount for re-instatement). The Missouri study queried claimants 8 to 10 weeks after disqualification, but the disqualifications varied. Misconduct involved four to eight weeks of ineligibility, while voluntary quits and refusal of work (over 70% of all disqualifications) required earnings equal to 10 times the weekly benefit amount for reinstatement.

The findings of the four studies of labor force status are summarized in Table 5. The results in three of the four States (Georgia, Kansas and Washington) were very similar, revealing a consistent tendency for about 60% of the disqualified to remain unemployed. The proportion re-employed varies somewhat, but averages out at less than one-third (the lowest re-employment proportion, in Washington, occurred at the beginning of a recession period).

TABLE 5

LABOR FORCE STATUS AFTER DISQUALIFICATION

Georgia, 6/56-7/56 (Sample Size - 1,008)

	All Disqualifications			Refusal of Work
	All 100	Male 100	Female 100	
Employed	30.1	37.8	18.9	
Unemployed	66.6	59.5	77.0	
Not in Labor Force	3.3	2.7	4.1	

(Percentages apply to respondents located after disqualification served. Additional 18% of sample could not be located and were believed out of local labor force).

Kansas, 9/62-8/63 (Sample Size - 4487)

	All Disqualifications			Refusal of Work		
	All 100	Male 100	Female 100	All 100	Male 100	Female 100
Employed	33.8	38.3	27.5	33.1	37.6	29.0
Unemployed	57.0	56.3	57.9	58.6	59.4	58.1
Not in Labor Force	9.2	5.4	14.6	8.3	1.0	12.9

(Percentages apply to those with known labor force status in 8th week after disqualification. Most disqualifications, including refusal of work, were for 7 weeks).

Missouri, 3/64-2/65 (Sample Size - 1858)

	All Disqualifications	Refusal of Work
	All	All
Employed	41.9	42.8
Had job, but lost it	12.6	13.9
Unemployed throughout	35.8	30.6
Out of Labor Force some time	9.7	12.8

(Percentages apply to known labor force status 8-10 weeks after disqualification. "Out of labor force" applies to those without work experience only).

Note: Exact data sources are described in Bibliography.

Washington, FY 1960 (Sample Size - 6608)

	All Disqualifications			Refusal of Work		
	All 100	Male 100	Female 100	All 100	Male 100	Female 100
Employed	22.5	25.7	17.4	26.9		
Unemployed	67.0	67.2	66.8	62.2		
Not in Labor Force	10.5	7.1	15.8	10.9		

(Percentages apply to known labor force status after 5 weeks)

As might be expected, re-employment tended to be more heavily concentrated among men, while departure from the labor force was more prevalent among women.

The Missouri data tend to be substantially different from those for the other three states, and probably reflect the somewhat more stringent requirements of Missouri law. Over 70% of disqualifications require re-employment and earnings equal to ten times the weekly benefit amount for re-instatement. This makes "waiting it out" essentially impossible in those cases. Thus, re-employment is far more likely. It is unfortunate that the Missouri data do not permit analysis by sex, since 85% of women disqualified had to meet the more stringent requirement while only 60% of the men did.

In addition to the proportions shown in Table 5, the Kansas study further examined the nature of the employment of those re-employed and the claim status of the unemployed. Among the disqualified as a whole and work refusers, approximately two-thirds of the re-employed had permanent full-time work, while about 20% had temporary part-time work, 10% had temporary full-time jobs and 3-4% had permanent part-time work. (Full-time is defined as 35-hours or more). These proportions were relatively constant between men and women. Among the unemployed, about 60% returned to claim status (about two-thirds, in the case of work refusers). The proportions among work refusers tended again to be stable across the sexes, but unemployed men showed a much higher propensity to return to claim status after serving out other disqualifications than did women.

The Missouri study also provided some additional information of interest. Those individuals who found work were asked to compare their earnings in any employment obtained after disqualification to their prior earnings. 41% of the disqualified replied that their earnings were lower, while 57% said they were the same or higher in equal proportions (2% did not reply). Corresponding proportions for work refusers were 36% lower, 33% higher and 31% the same. The proportions of lower and the same or higher earnings are roughly similar to the proportions of part time and full time employment for Kansas, suggesting that the two phenomena are probably very closely related.

BIBLIOGRAPHY OF STUDIES REVIEWED
AND
DATA SOURCE DESCRIPTIONS

California

"Characteristics Study of Unemployment Insurance: Claimants Who Filed Claims in 1970", and "Claimants Who Filed Valid New Claims October, 1966 - September, 1967", State of California Employment Development Department, Employment Data and Research Division, December, 1974 and April, 1970, respectively.

Weekly benefit data derived from Appendix Table 42 in 1974 report and Appendix Table 1 in 1970 report by dividing average benefit amounts by average claim duration.

Benefit eligibility calculated from distributions in Appendix Table 45A in 1974 report.

Duration of benefits after disqualification calculated from distributions in Appendix Table 48 in 1974 report and Appendix Table 53 in 1970 report.

Sex and age distributions calculated from distributions in Appendix Table 5 in 1974 report and Appendix 6 in 1970 report.

Marital status distribution calculated from Appendix Table 29, in 1974 report.

Georgia

"The Labor Force Status of Disqualified Claimants", Georgia Employment Security Agency, June, 1958.

Age and sex data, pp. 2-3.

Labor force status distribution, p. 4.

Kansas

"Disqualification for Unemployment Insurance", Research and Statistics Department, Employment Security Division, Kansas State Department of Labor, June, 1965.

Weekly benefit data calculated from information on page 7 and Appendix Table 10.

Benefit eligibility calculated from distribution in Appendix Table 11.

Benefits drawn after disqualification calculated from Appendix Table 22.

Sex and age distributions calculated from distributions on page 7 and Appendix Table 2.

Marital status distribution is in Appendix Table 4.

Labor force status data derived from Appendix Tables 12A, 12B, 12C.

Minnesota

Legislative Report Series 5, "Disqualifications", Minnesota Department of Employment Security, Research and Planning Section, December, 1964.

No applicable data found.

Missouri

"The Labor Force Status of Disqualified Claimants", Missouri Division of Employment Security Research and Analysis, December, 1966.

Weekly benefits calculated from distribution in Statistical Table 9.

Age and sex distributions derived from distributions in Statistical Table 6.

Marital status from Statistical Table 2.

Labor force status data derived from Statistical Tables 14, 15, and 25.

Nebraska

"Survey of Disqualified Claimants", Nebraska Department of Labor, Division of Employment, Research and Statistics, 1967.

Weekly benefits and age and sex distribution calculated from distributions on page 13.

New York

"Denial of Unemployment Insurance Benefits, 1959-60 and 1961-62", New York Department of Labor, Division of Employment, Research and Statistics Office, November, 1966.

Weekly benefits calculated from Appendix Tables 1, 8, 9, A-1, A-8, A-9.

Percent of benefits after disqualification found in Appendix Tables 10 and A-10.

Age and sex distribution derived from Appendix Tables 8 and A-8.

Ohio

Research memo no. 18, "Disqualification Trends Since 1962", and Research memo no. 34, "Disqualification Patterns, 1961 and 1966", Ohio Bureau of Employment Services, Division of Research and Statistics, February, 1966 and May, 1967, respectively.

No useable data.

Oregon

"A Study of Oregon's Disqualified Claimants", Oregon Department of Employment, Research and Statistics Division, 1964.

Age and sex derived from Table 3.

South Dakota

"Disqualifications from Unemployment Insurance in 1966 under the South Dakota Employment Security Law", Employment Security Department of South Dakota, Research and Statistics, November, 1968.

Weekly benefits calculated from distribution in Appendix Table VII.

Age and sex derived from page 4 and Appendix Table 1.

Tennessee

"Disqualifications for Unemployment Insurance Benefits under the Tennessee Employment Security Law, 1966", and "Disqualifications under the 1963 Amendments to the Tennessee Employment Security Law", Research and Statistics Section, Tennessee Department of Employment Security, June, 1969, and July, 1965, respectively.

1967 weekly benefits and benefit eligibility from page 22 and Appendix Table 1 of 1969 report.

1965 weekly benefits from page 1 and Table 2 of 1965 report.

1965 benefit eligibility from Table 4 of 1965 report.

1967 sex distribution from Appendix Table 2 of 1969 report.

1965 sex distribution for Table 1 of 1965 report.

Texas

"A Study of Uniform Disqualifications", Texas Employment Commission, June, 1964.

Age and sex distributions from Tables IV and V, pp. 12-13.

Utah

"Actuarial Review and Unemployment Statistics", Utah Department of Employment Security, September, 1975.

No useable data.

Washington

"Study of Disqualified Claimants", Washington Employment Security Department, Research and Statistics Section, January, 1961.

Percent of benefits paid after disqualification found in Table 11, p. 24.

Age and sex distribution derived from Table 5, p. 18.

Labor force status found in Table 9, p. 22.

APPENDIX F

EMPLOYMENT SERVICE PRODUCTIVITY SIMULATION SYSTEM (ESPSS): USER DOCUMENTATION

1.0 INTRODUCTION

This appendix describes a computerized system designed to simulate economic benefits of the Employment Service by state, region, and for the total United States. The system was developed for three reasons:

- To illustrate the application of economic concepts to the measurement of employment service outputs and social benefits in both a gross and net sense.
- To provide the capability to calculate both labor and total factor productivities by state, region, and for the total United States, using alternative assumptions concerning determinants of ES performance.
- To provide the capability for examining the sensitivity of gross and net benefit estimates to different assumptions concerning both economic and distributional factors affecting the estimates.
- To provide the capability to calculate and study the productivity implications of the best available evidence on economic determinants of ES performance at the state, regional, and national levels.

The system is designed to estimate and report output value for the system as a whole and for the two types of activity which we have found to be most important: labor exchange and enforcement. These values are calculated and reported in a gross sense and then compared with reported costs and resource utilization to report net economic benefit estimates. The reports may be rerun using altered assumptions concerning economic and distributional factors.

Labor exchange output value estimates are generated by the application of productivity formulas to ESARS 2% sample data. Resulting estimates are adjusted to take account of evidence on indirect placements. Enforcement output values are generated from UI data on claim denials, claim values, and durations, combined with extrapulated data from the ESARS 2% sample on ES placement activity on behalf of UI claimants. Cost and resource data are state totals for the appropriate fiscal year. All estimations are performed both with and without priority weights reflecting distributional objectives of the ES.

As presently configured, the system may be operated interactively using the time share option (TSO) of the Northwest District of Boeing Computer Services, Inc. The user may access the system via computer terminal in order to re-set the values of:

- Priority weights
- Expected durations of placement categories
- Expected search time savings
- Productivity formula coefficients
- Indirect placement rates
- Enforcement deterrence rates

After the request has been executed, the output file may be accessed either in total or for single states, regions, or the total United States. Operation on the Northwest District TSO is convenient for the present contract. However, if the system is seen to have utility to other users, it is recommended that it be transferred to the BCS national time share network (Mainstream-TSO) which is operated in McLean, Virginia. Transfer to the Mainstream network will allow users in most major cities to access the system in a conversational mode with no line charges. Since the Mainstream-TSO system features remote edit and remote job entry capabilities, batch processing would also be possible at very low cost.

The following sections describe in further detail the outputs, estimation methodology, and simulation capabilities of the ES Productivity Simulation System. Appendix F-1 contains a detailed description of processing steps and file layouts. Appendix F-2 contains instructions for altering assumed input values via computer terminal and obtaining batch reports.

2.0 SYSTEM OUTPUT

Table 1 is an example of the system report. The example shows the United States total; both state and region reports have the same format as that shown. Note that there are five categories: labor exchange value, enforcement value, total value, productivity, and sample counts. In the labor exchange category, there are five subgroups; these correspond to a maximum of five priority groups to which different policy weights may be assigned. In the report shown in the example, only four groups were distinguished, corresponding to the four priority groups presently used by the ES in performance evaluations. For each priority group, there are three alternative direct placement value calculations which result from the application of three estimation methodologies to the ESARS 2% sample data. The three columns contain the results of these three computations. The general forms of these formulas are described in the following section.

We have argued elsewhere that the value of labor exchange output derives almost entirely from placement activities. Placement value consists conceptually of the net effect of an enhanced earnings capability combined with an altered search cost. Since one of the three formulas calculates these components separately, the row headings reflect this distinction and also provide for a subtotal of the direct placement value computations.

The indirect subtotal row displays results of an estimated indirect placement value based on an assumed placement rate for referrals not leading to verified placements. The general form of this estimation procedure is also described in the following section.

Once the placement values are calculated for each priority group, the values for all groups are summed. Note that the sums are reported in both weighted and unweighted form. The weighted sums reflect the application of the policy weights associated with the respective priority groups. Both the unweighted and weighted sums are then extrapolated to be consistent with the state population totals based on the ratio of applicants encountered in the ESARS 2% sample file to total applicants reported for the state.

Under enforcement value, we distinguish two types of output: outputs generated by successful placement of UI claimants and claim denials as a result of the work test. Both values are expressed in terms of dollar claim liabilities saved. The total of these two items is labeled "Claims Saved Direct," and is

TABLE 1

LABOR EXCHANGE VALUE	METHOD 1	METHOD 2	METHOD 3
PRIORITY GROUP 1			
Direct Benefit Diff.	0.	609028.	0.
Direct Cost Diff.	0.	1577788.	0.
Direct Subtotal	15915212.	2186816.	3151339.
Indirect Subtotal	2163709.	292709.	420768.
Total Group	18078921.	2479525.	3572107.
PRIORITY GROUP 2			
Direct Benefit Diff.	0.	4195536.	0.
Direct Cost Diff.	0.	5157724.	0.
Direct Subtotal	53517683.	9353260.	10631830.
Indirect Subtotal	7217986.	1259444.	1442838.
Total Group	60735669.	10612704.	12074668.
PRIORITY GROUP 3			
Direct Benefit Diff.	0.	610619.	0.
Direct Cost Diff.	0.	527886.	0.
Direct Subtotal	4554928.	1138505.	28481.
Indirect Subtotal	601423.	150379.	3688.
Total Group	5156351.	1288884.	32168.
PRIORITY GROUP 4			
Direct Benefit Diff.	0.	470690.	0.
Direct Cost Diff.	0.	1537970.	0.
Direct Subtotal	15075935.	2008660.	1117061.
Indirect Subtotal	3034191.	269198.	145757.
Total Group	17099126.	2277858.	1262818.
PRIORITY GROUP 5			
Direct Benefit Diff.	0.	0.	0.
Direct Cost Diff.	0.	0.	0.
Direct Subtotal	0.	0.	0.
Indirect Subtotal	0.	0.	0.
Total Group	0.	0.	0.
TOTAL ALL GROUPS			
Unweighted	101070067.	16658971.	16941762.
Weighted	300017441.	49091365.	55411695.
Extrapolated U	3067740223.	491587843.	524153561.
Extrapolated W	9091565461.	1442840927.	1713088658.
---ENFORCEMENT VALUE---			
Claims Saved by Worktest	41277759.		
Claims Saved by Placements	36722747.		
Claims Saved Direct	78000506.		
Claims Deterred by Worktest	82555517.		
Claims Deterred by Placement	73445495.		
Claims Deterred	156001012.		
Total	234001518.		

TABLE 1 (CONTINUED)

---TOTAL VALUES---			
Unweighted	3301741741.	725589361.	758155079.
Weighted	9325566979.	1676842445.	1947090176.
Total Costs	372999018.		
Total Manyears	21012.		
---PRODUCTIVITY---			
Labor Productivity:			
Unweighted Total	157138.	34533.	36082.
Weighted Total	443826.	79805.	92667.
Labor Exchange Unweighted	181119.	29023.	30946.
Labor Exchange Weighted	536764.	85185.	101140.
Enforcement Direct	19146.		
Enforcement Total	57437.		
TOTAL FACTOR PRODUCTIVITY			
Unweighted Total	8.85	1.95	2.03
Weighted Total	25.00	4.50	5.22
LABOR EXCHANGE UNWEIGHTED	10.20	1.63	1.74
Labor Exchange Weighted	30.24	4.80	5.70
Enforcement Direct	1.08		
Enforcement Total	3.24		

--- SAMPLE COUNTS ---		%GRP1	%GRP2	%GRP3	%GRP4	%GRP5
INDIVIDUALS	357742.00	15.99	66.68	3.91	13.42	0.0
INDIVIDUALS REFERRED	114584.00	14.61	63.36	5.66	16.37	0.0
INDIVIDUALS PLACED	60930.00	13.85	63.29	6.74	16.13	0.0
SERVICE TRANSACTIONS	1377415.00	15.64	68.53	3.58	12.25	0.0
REFER TRANSACTIONS	237546.00	17.46	62.45	4.61	15.47	0.0
PLACE TRANSACTIONS	95306.00	17.05	62.38	5.84	14.73	0.0
UI CLAIMANTS	92902.00	22.15	77.85	0.0	0.0	0.0
UI CLAIMANTS REFERRED	22217.00	22.76	77.24	0.0	0.0	0.0
UI CLAIMANTS PLACED	9866.00	23.28	76.72	0.0	0.0	0.0
UI CLAIMANT TRANSACTION	316796.00	22.68	77.32	0.0	0.0	0.0
UI REFERRAL TRANSACTION	50450.00	24.82	75.18	0.0	0.0	0.0
UI PLACEMENT TRANSACTION	15092.00	25.23	74.77	0.0	0.0	0.0
INDIV NOT PLACED BUT TRAINED	2562.00	6.91	85.64	3.01	4.45	0.0
INDIV NOT PLACED BUT COUNTED	13232.00	13.72	72.27	3.91	10.10	0.0

reported in the third line of the enforcement section. The remaining three rows in the enforcement value section reflect the deterrent value of direct enforcement activity. Deterrent values are obtained as a multiple of direct claims saving values. The value of this multiple is a factor which may be changed by the user to reflect different assumptions.

The total value calculations are simply the sums of unweighted and weighted placement values together with the enforcement values. Total costs and manyears are also shown in the total value section.

The last section computes labor and total factor productivity for labor exchange activities, enforcement activities and the total, using both the unweighted and weighted value sums. For the total, these computations are simply a division of the respective output value sums by either total manyears of total costs; for enforcement activities the program computes a divisor by multiplying the ratio of UI referrals to total referrals times total manyears and total costs, respectively. Similarly, the ration of non-UI referrals to the total is used to create divisors for the labor exchange productivity calculations. This approach reflects the assumption that manyears and costs are split between labor exchange and enforcement activities in proportion to referrals of non-UI and UI claimant applicants. Clearly, this assumption can only approximate the truth and it would be preferable to obtain some actual effort data to improve on this technique.

Beneath the productivity section are reported the counts of individuals and service transactions for the various categories shown which were obtained directly from the ESARS 2% sample file. The distribution of these counts over the five priority groups is also shown in percentage terms. The last two rows are counts of individuals who are not placed but are enrolled in training or are counseled. Since these represent final outputs of the system whose values are not taken account of in the placement value section of the report, they are shown for completeness. They have been excluded from the placement value section because they were not seen as important enough in order of magnitude to warrant development of a special productivity formula at this point.

3.0 ESTIMATION METHODOLOGY

The estimation procedures used in computing both placement and enforcement value can be altered by the user. The user may re-set the values of parameters of the estimation models by computer terminal and then re-run the system to generate reports showing the effect of the new assumptions. This section describes the formulas and user-determined parameters used in the labor exchange value and enforcement value computations. Appendix A contains specifications of the program with respect to the file layouts and the addresses of all inputs to the computational formulas described here. Also, the values of characters in these fields are given for all conditional statements and tests. Appendix C contains instructions for resetting the values of parameters used in the formulas described below.

3.1 Labor Exchange Value Computations

We distinguish between direct and indirect placement values in the labor exchange value computations. Direct placement are those recorded and verified by the ES as placements and are obtained directly from the ESARS sample data. Indirect placements are placements which are not recorded because of verification and follow-up problems. As discussed in Chapter 3, indirect placements are most likely for individuals who are referred but not recorded as placed. Accordingly, the program allows the user to input an assumed "indirect placement rate" for non-placed referrals.

Three alternative methods are used to estimate direct placement value. These methods result in the values printed in columns one, two, and three, respectively, of the report. Method one is simply an estimate of the earnings stream associated with the ES placement. In other words, the expected duration of the placement is multiplied by the hourly wage recorded for the placement of the ESARS 2% sample data. Since the sample data only show expected duration in three categories (one to three days; four to 150 days, and over 150 days), the first three parameters for which the user must set the values are the actual number of hours associated on the average with each of these duration categories.

The second method multiplies the value determined in method one by the unemployment rate appropriate to the state and characteristics of the individual. The relevant characteristics for the purposes of matching individuals to unemployment rates are age, sex, and race. The rationale for applying the unemployment rate to the gross income stream associated with the ES placement in method two is as follows: The unemployment rate is the gross probability that the individual will be unemployed at a point in time. As such, it may be interpreted as the rate at which an unassisted individual would discount the value of a job available under conditions of uncertainty, without the aid of ES, in termining what job offer made with certainty to accept. By presenting the individual with a job under conditions of certainty, the ES has enhanced its earnings stream by the value of this discount; that is, by the unemployment rate times the gross value of the ES placement. At the same time, we wish to take account of the fact that the ES may save the individual search time. Therefore, for all individuals except UI claimants who are placed while unemployed, allowance is made for assuming a search cost saving.* The user inputs this value as parameter number four. This value may be either positive or negative to reflect the assumptions that search costs may be either decreased or increased by using ES, and is expressed in hours. The opportunity cost savings is calculated by the program by multiplying the assumed search savings in hours times the hourly wage reported in the ES placement. Method two results are reported in column 2, lines 1 and 2 of the labor exchange value section of the report.

Method three allows the application of a model such as that derived by Arnold Katz from econometric analysis of ESARS-CWBH Matched files in Pennsylvania. Katz' model is a model of the earnings differential generated by using ES. Therefore, it already takes account of both the benefit and cost differentials and represents a net benefit figure. For example, if any individual is unemployed, no income is reported in the CWBH file; hence search costs are taken into account by that file. The model relates earnings differentials to age, race, and educational attainment of the individual placed. Parameters of the model are all factors which can be set by the user.** The model allows the user to specify a relationship between individual characteristics and earnings differentials on an annual basis for individuals between the ages of 25 and 44 and individuals of all other ages, as well as to add components based on race and educational attainment.

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* UI claimants are excluded on the grounds that, since their search is subsidized, they have no incentive to conserve search and hence are unlikely to realize a search savings.

** See Appendix G for values selected for analytical purposes in the present project.

The model has the form:

F5 + F6(u_{ijk}), for all individuals aged 25-44.

F7 + F8(u_{ijk}), for individuals aged under 25 and over 44.

F9 + F10(u_{ijk}), increment for non-white individuals.

F11 + F12(u_{ijk}), increment for individuals with high school diploma.

In this form the F's are user-determined parameters and the u's are relevant unemployment rates. The form allows the differentials for different characteristics to be sensitive to the unemployment rate, a relationship which is suggested by Katz' findings in Pennsylvania. The user must set the values of F5 through F12 in preparing the report.

Indirect placements are estimated as a multiple of direct placement values. The multiple is of the form:

F20 (individuals referred - individuals placed) ÷ individuals placed.

The value of F20 is the placement rate for non-placed referrals, a number for which we have some evidence as described in Chapter 3 and Appendix G. As is evident from the formula, the program computes indirect placement value by multiplying direct value by the ratio of indirect to direct placements.

The final two labor exchange computations produce unweighted and weighted sums of priority group totals and extrapolations of sample data to a population basis. The weighted sums are generated by applying the priority weights input as the values of parameters 13 to 17 by the user to the priority group totals for groups 1 to 5, respectively. As presently coded, the program assigns placement values for the following individuals to priority groups as follows:

Priority Group	Characteristics
1	All veterans
2	Non-white, poor, UI, female, handicapped, older workers
3	Youth
4	All other
5	Not presently used

Since placement values are generated by data in the ESARS 2% sample file, they are not initially comparable to other state level data. To make them comparable, sample results are extrapolated by dividing by the ratio of sample applicants to total applicants for the state. The program extrapolates both the unweighted and weighted values from the sample data.

3.2 Enforcement Computations

As in the case of placement values, we distinguish between direct and indirect enforcement values. Direct enforcement values, as described in Chapter 4, are those claims liabilities saved due to placements or claim denials involving present UI claimants. The indirect values are those which may be interpreted as claims liabilities for individuals not presently claimants which are deterred as a consequence of the enforcement activities involving present UI claimants.

Direct enforcement value is calculated as the sum of two components, claims liabilities saved by placement and work test. First, for all UI claimants who are placed, a claim liability saving is computed. This is done by multiplying total UI claimants placed times the average weekly claim value for the state times the number of weeks of duration for a UI claimant which are saved because of placement. For work tests, the value is computed similarly. The state's total number of individual claims denied because of refusal of suitable work is multiplied times the average weekly claim value of the state and the result times the savings in claims duration for work tests. Both the claim value and claim duration data are input by state.

The respective indirect enforcement values, that is, the values of claims deterred, are computed as multiples of the corresponding direct values. The multiples are entered by the user as the value of parameter 18 for work tests and parameter 19 for placements.

4.0 INPUT DATA

Figure 1 identifies the various types of data used by the system. In addition to simulation parameter values, there are two types of data: a sample of detailed applicant records from state ESARS data files and state level totals for various other data elements.

The largest input file is the ESARS 2% sample. The program presently accepts the 1974 file. This file comprises three 9-track tapes which are presently mounted on the BCS IBM 370 in Kent, Washington. This file contains approximately 350,000 records. It is documented (both source data and file layout) in Appendix F-2. Basically, the file contains a random sample of all applicant records from the state ESARS data banks for FY 1974. ESARS applicant characteristics and service records are merged in creation of the sample file. Due to sampling and file submission errors, the FY 1974 sample does not contain data from Delaware, Louisiana, Nevada, New Mexico, Puerto Rico, Rhode Island or Tennessee. This file is read first to accumulate counts of the different individuals and transactions by priority group and also by categories required for the value computations described above.

The remaining data files supplement the basic ESARS transactions file in the course of value computations. File contents are evident from their titles as shown on Figure 1. All these supplemental files are obtained manually and input initially via remote computer terminal. Briefly, the sources of data in all these files except the simulation factors are as follows:

FILE	SOURCE
FY 1974 Cost and Man-Year Data	FY 1976 BPF worksheets
Unemployment Rate Data	Tables A and D of the 1974 Manpower Report of the President and BLS Geographic Profiles data
Enforcement Data	USUI Records on duration, claim value, and claim denials FY 1976 BPF worksheet records on number of applicants by state

The unemployment rate estimates presently input are based on 1973 data for states and SMSA's from the 1974 Manpower Report of the President* and the

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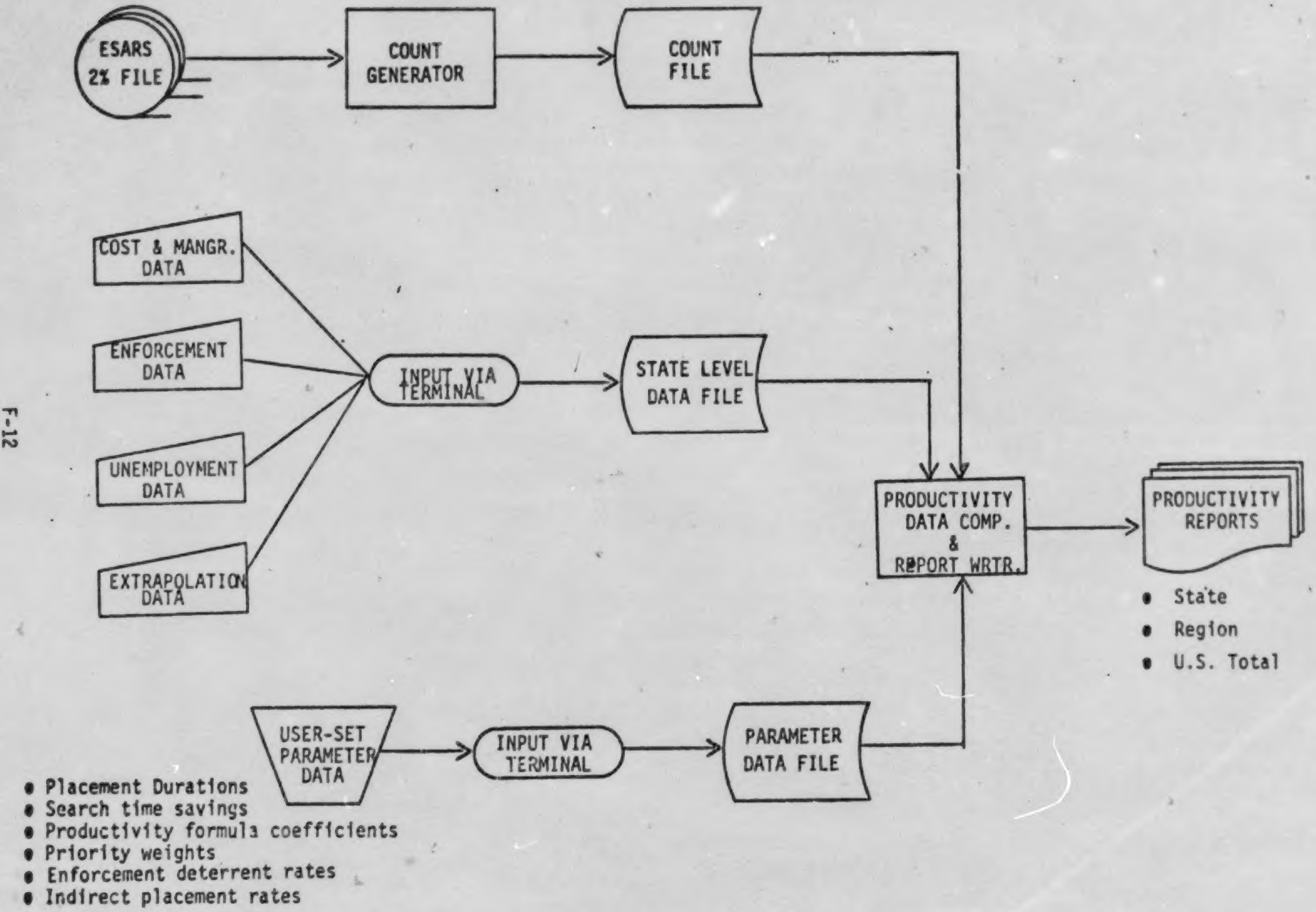
* Manpower Report of the President, Appendix Tables D-5 and D-7, April 1974.

FIGURE 1

INPUT DATA AND FLOW OF PROCESSING FOR ESPSS


ESARS 2% FILE
COUNT GENERATOR
COUNT FILE
COST & MANGR. DATA
ENFORCEMENT DATA
UNEMPLOYMENT DATA
EXTRAPOLATION DATA
INPUT VIA TERMINAL
STATE LEVEL DATA FILE
PRODUCTIVITY DATA COMP. & REPORT WRTR.
PRODUCTIVITY REPORTS
• State
• Region
• U.S. Total
USER-SET PARAMETER DATA
INPUT VIA TERMINAL
PARAMETER DATA FILE
• Placement Durations
• Search time savings
• Productivity formula coefficients
• Priority weights
• Enforcement deterrent rates
• Indirect placement rates

the Bureau of Labor Statistics.* Data for calendar year 1973 were used because data for FY 1974 were not available in sufficient detail and because economic conditions in calendar 1973 were closest to those for FY 1974 (by the second half of 1974 unemployment had begun to rise sharply). The BLS data provided labor force and unemployment statistics by sex, race and age groupings for each federal region, for the 19 largest states and the 30 largest SMSA's. Detailed data for the remaining states were then estimated by the following technique. Within each region the labor force and unemployment for each sex/race/age group for the largest state were deducted from region totals. The remainders were then allocated among the other states in the region in proportion to their total labor force and unemployment found in the Manpower Report data. Finally, unemployment rates were computed for each age/sex/race group. Because of the allocative nature of this technique, any estimating errors tend to be bounded by the regional totals and to be compensating. SMSA estimates for smaller cities were performed in the same manner.

All UI data were derived from the monthly publication "UI Statistics." UI denials due to refusal of suitable work were taken from Table 13 of the October 1974 issue, Denials Under State Programs by Issue, July 1973-June 1974. The average value of weekly UI payments and the duration of benefits were taken from Table 8, Selected Unemployment Insurance Activities Under State Programs, July 1973-June 1974. For evaluating claims denied due to the work test, we assume that these such individuals are likely to be those exhausting claims unless detected. Hence, the savings in claim duration from detecting these individuals is estimated as the difference between total weeks of statutory liability and average duration for the state. On the other hand, we assume that individuals placed are not likely to be exhaustees because their placement is evidence of sincere search for work. For these individuals, the savings in claim duration liability due to placement by the ES is assumed to be two weeks for all states.

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* "Geographic Profile of Employment and Unemployment for 1973" (BLS Report 431, 1974), Tables 1, 3 and 5.

APPENDIX F-1

THE ES PRODUCTIVITY SIMULATION SPECIFICATIONS SYSTEM (ESPSS)

Figure A-1 displays the general flow processing. The figure indicates that the system operates in two phases. Phase 1 is a count generation phase using the ESARS 2% sample file; Phase 2 is a productivity report generation phase which combined the counts with state level data and user-determined assumptions to generate productivity reports. The two-phased approach was adopted because the large size of the ESARS sample file makes count runs expensive ($40 to $40 per run) and because alternative value computations do not require counts to be performed more than once. Since we planned to use the value generation phase numerous times to test the sensitivity of results to different assumptions, this approach offered considerable savings in computer costs.

A.1 Reports

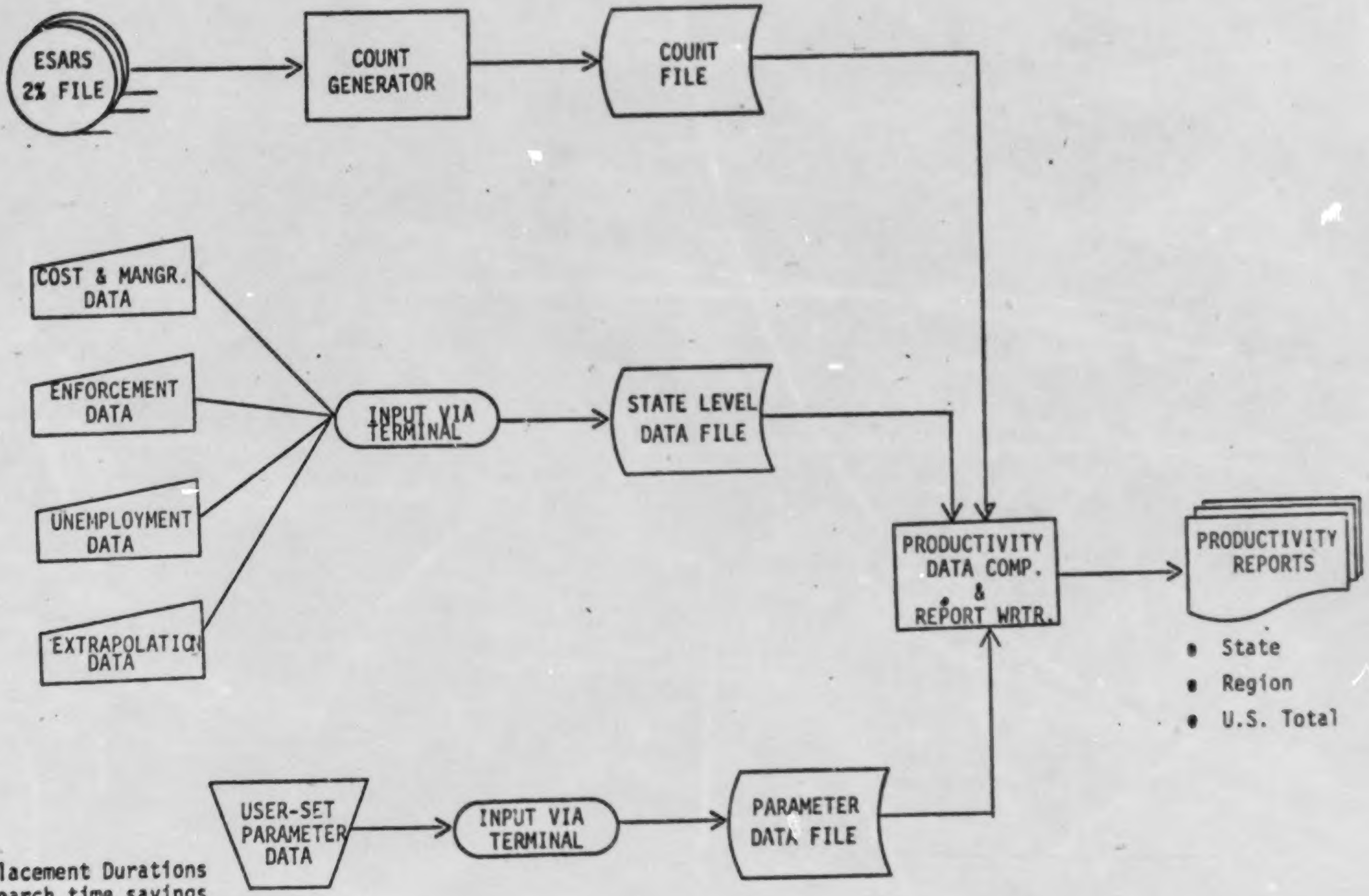
The system produces the report described in Section 2 of this working paper. It is possible to have output data elements from line 3A, 3B, 3C, 6 and 7, 8 and 9, 13 and 14, 17 and 18, and 19 and 20 of the reports reproduced on punched cards for purposes of statistical and other analysis. All information on lines 1, 2 and 3 of the report are obtained from the application of formulas described in section 3.0 of the text to data elements in the ESARS sample file. The remaining calculations are subtotals, weighted sums, or combinations of data from state level files and user-determined assumptions with totals previously accumulated to the state level from the ESARS file.

A.2 Count Generation Processing

The count generation process reads the ESARS file, performs subtotals of weighted and unweighted counts by state and produces a disk file of these subtotals. The input to the count generation process is the ESARS 2% sample file. The system currently accepts the FY 1974 file. Figure A-2 contains the record format of the 2% sample file. The codes and acronyms written into the record spaces in Figure A-2 correspond to those used in Chapter 6 of the ESARS handbook for the applicant and master service record layouts. The structure of this file is that each individual applicant is given a unique identifying number (originally social security number but replaced on the sample file with a sequence number to preserve anonymity). The base record (the first eighty

FIGURE A-1

INPUT DATA AND FLOW OF PROCESSING FOR ESPSS


ESARS 2% FILE
COUNT GENERATOR
COUNT FILE
COST & MANGR. DATA
ENFORCEMENT DATA
UNEMPLOYMENT DATA
EXTRAPOLATION DATA
INPUT VIA TERMINAL
STATE LEVEL DATA FILE
PRODUCTIVITY DATA COMP. & REPORT WRTR.
PRODUCTIVITY REPORTS
USER-SET PARAMETER DATA
INPUT VIA TERMINAL
PARAMETER DATA FILE

- State
- Region
- U.S. Total

- Placement Durations
- Search time savings
- Productivity formula coefficients
- Priority weights
- Enforcement deterrent rates
- Indirect placement rates

characters) contains several fixed and variable characteristics describing the individual at the time of his initial intake. Variable characteristics are those such as welfare and employment status which can change from time to time. This base record is followed by up to 99 date sorted trailers, one for each service administered to the individual. The trailers may include an additional applicant characteristics record if the applicant applied at more than one local office, as well as identifiers and characteristics of services rendered to the applicant. As indicated in Chapter 6 of the ESARS manual, the format and content of the trailer vary depending on the kind of service (as determined by the transaction code in columns 1-3 of the trailer record). Appendix B contains a description of the 2% sample from the ESARS Handbook, Chapter 8, and documentation and record layouts of the original 2% sample submission forms from the ESARS Handbook, Chapter 6. Note that the merged sample format is not the same as that in which the original merged data are received from the states and as shown in the ESARS handbooks. The data are stored in three 9-track 1600 BPI tapes blocked 8088. The tapes were created by IBM 370 equipment using the 'write only' option. EBCDIC conventions are followed and standard OS labels are used.

The logic of the count generation phase is derived from the algebraic formulas for placement value computations described in Section 3.0 of the text. Each of these formulas may be simplified by combining terms to isolate the data elements which may be counted separately for subsequent use in combination with state level data and different settings of the user-determined parameters. For example, within a state for priority group i, the subtotal of direct placement values estimated by method one may be written:

$$F_1 \sum_{j=1}^{1} X_{ij1} + F_2 \sum_{j=1}^{m} X_{ij2} + F_3 \sum_{j=1}^{n} X_{ij3}$$

where X_{ij1}, X_{ij2}, and X_{ij3} are the hourly wages for the jth placement transaction involving individuals in priority group i having duration recorded as 1-3 days, 4-150 days, and over 150 days, respectively. F_1, F_2, and F_3 are the respective duration assumption parameters for these categories. To simplify, we shall rewrite ΣX_{ij1} as $1X_{i1}$, ΣX_{ij2} as $1X_{i2}$ and so on. Then the formula becomes,

$$F_1 1X_{11} + F_2 1X_{12} + F_3 1X_{13}$$

Similarly, the second formula described in Section 3.0 of the text may be written as follows. The direct benefit is given by

$$F_1 \sum_{j=1}^{1} X_{ij1}U_j + F_2 \sum_{j=1}^{m} X_{ij2}U_j + F_3 \sum_{j=1}^{n} X_{ij3}U_j$$

where U_j is an unemployment rate associated with the individual being placed and is selected on the basis of individual characteristics as shown in Table A-1. The search cost component is given by

$$F_4 \sum_{j=1}^{p} X_{ij4},$$

where X_{ij4} is the hourly pay for the jth placement transaction involving individuals in priority group i who are not UI claimants.

Table A-1

INDIVIDUAL CHARACTERISTICS FOR MATCHING WITH UNEMPLOYMENT RATES

Characteristic Set	ESARS Record Values (Base Record) Column	Column	Column
1. White Adult Male	45=1	39=greater than 1	31=1
2. White Adult Female	45=1		31=2
3. White Youth	45=1	39=1	31=1 or 2
4. Non-White Adult Male	45=all other	39=greater than 1	31=1
5. Non-White Adult Female	45=all other		31=2
6. Non-White Youth	45=all other	39=1	31=1 or 2

FIGURE A-2

2% SAMPLE RECORD

BASIC CHARACTERISTICS PART - 80 CHARACTERS

FIELD	CHARACTER	POSITION	
Region	1	1	
State	2	2 - 3	
SSN	9	4 - 12	
Filler	4	13 - 16	
SMSA	4	17 - 20	
T. Code	3	21 - 23	
Date	6	24 - 29	YYMMDD
TEA	1	30	
Sex	1	31	
X Entry	1	32	
DOT	6	33 - 38	
Filler	1	39	
X Character	1	40	
Filler	1	41	
WIN	1	42	
Food Stamps	1	43	
Disadvantaged	1	44	
Ethnic	1	45	
Spanish	1	46	
Veteran	1	47	

TRAILERS (40 CHARACTERS EA.) VARY FROM 00 TO 99

FIELD	CHARACTER	POSITION	
Year of Birth	2	48 - 49	
Welfare	1	50	
Summer Youth	1	51	
LFSC	1	52	
Food Stamps	1	53	
UI Claimant	1	54	
Handicapped	1	55	
Residence	1	56	
Highest Grade	2	57 - 58	
Reporting Code	1	59	
Status	1	60	
Local Office	4	61 - 64	
Master SI	1	65	
CMP	1	66	
DOT Suffix	3	67 - 69	
Family Income	1	70	
Year of Sample	2	71 - 72	YY
Filler	5	73 - 77	
No. Char. Records	1	78	
Trailer Count*	2	79 - 80	

* indicates No. of Trailers - may vary from 00 to 99

Again, we may simplify by rewriting $\Sigma X_{ij1}U_j$ as $2X_{i1}$, $\Sigma X_{ij2}U_j$ as $2X_{12}$ and so on. Method two calculations may then be summarized as,

$$F_1 2X_{i1} \; + \; F_2 2X_{i1} \; + \; F_3 2X_{i3}, \text{ and } \; F_4 2X_{i4}$$

Method three calculations are given by,

$$\begin{aligned}
&F_5 N_{i5} + F_6 \sum_j U_{ij5} + \\
&F_7 N_{i7} + F_8 \sum_j U_{ij7} + \\
&F_9 N_{i9} + F_{10} \sum_j U_{ij9} + \\
&F_{11} N_{i11} + F_{12} \sum_j U_{ij11} \; ,
\end{aligned}$$

where N_{ij} is the number of individuals in priority group i with characteristics summarized by j in the following list, and U_{ij} are the respective unemployment rates:

j	Characteristic
5	Age 25 to 44
7	Age under 25 or over 44
9	Non-White
11	High School Graduate

The F_5 - F_{12} are parameters representing earnings differentials and coefficients for individuals with these characteristics.

Finally, the indirect placement formula may be stated as follows:

$$F_{20} \; \frac{(N_{ir} - N_{ip})}{N_{ip}} \quad ,$$

where N_{ir} is the number of individuals referred in priority group i and N_{ip} is the number placed.

Clearly, in order to simulate the results of different assumed parameter values, it is only necessary to reset the parameter values. The counts $1X_{i1j}$, $1X_{i2}$, and so on need only be performed once. The count generation process then cumulates all these counts for each state, region, and for the United States total. Within any geographic division, placement counts are acculated first by priority group of the individual placed. Table A-2 identifies the priority groups and their corresponding position and code values on the ESARS sample file record. Thus, for a given state, the program will generate five count sets, one for each priority group. Each priority group count set will contain counts for those individuals and their respective priority group.

In addition to the placement value count, the count phase will also generate tabulations on applicant and service records. These items are counted for sample verification and bias detection purposes. For each state, region, and United States total, the program sums the following items:

A. # Individuals = # Records (A record is a base + trailers, all as one variable length record)

B. # Individuals Referred = # Records with at least one Referral trailer

C. # Individuals Placed = # Records with at least one Placement trailer

D. # Service Transactions = # Trailers

E. # Referral Transactions = # Referral trailers

F. # Placement Transactions = # Placement trailers

G. # UI Claimants = # Records which have UI (Unemployment Insurance)

H. # UI Claimants Referred = # Records with UI and at least on Referral trailer (work test)

I. # UI Claimants Placed = # Records with UI and at least one Placement trailer

J. # UI Claimant Transactions = # Trailers on records with UI

K. # UI Referral Transactions = # Referral trailers on records with UI

L. # UI Placement Transactions = # Placement trailers on records with UI

M. # Individuals not placed who were trained = # Records with no placement trailers but with at least one training trailer. Code 345-358

N. # Individuals not placed who received counselling = # Records which have no placement trailers but with at least one counselling trailer

TABLE A-2
SOURCE DATA FOR TESTS AND COMPUTATIONS

DATA ITEM	BASE/TRLR		POSITION	VALUE FOR YES
Transaction code* (referral)		x	1-3	242, 252, 262
UI claimant	x		54	1,2
Priority group 1 (vet)	x		47	1
Priority group 2 (non-white, female, older)	x		(See Below)	
Poor	x		70	1
UI claimant	x		54	1-2
Handicapped	x		55	1-3
Priority group 3 (youth)	x		39	1
Priority group 4				All other records
Transaction code (placement)		x	1-3	750-776
Transaction (Plcmt. 150 days)		x	1-3	75x x = 0 - 6
Transaction (Plcmt. 4-150 days)		x	1-3	76x
Transaction (Plcmt 1-3 days)		x	1-3	77x
Transaction code (training)		x	1-3	34x - 35x (x = 0 - 3, 5, 7, 8)
Transaction code (counselling)		x	1-3	200, 202
State code	x		2-3	1-51
Region code	x		1	1-10
(SMSA code)	x		17-20	1-9999
Hourly pay (NB: decimal implied)		x	18-21	.0050-2500
Demographic characteristics				
Ethnic (white/non-white)	x		45	1/all other
Sex (male/female)	x		31	1/2
Age: Under 20	x		39	1
20-21				2
22-24				3
25-29				4
30-39				5
40-44				6
45-54				7
55-64				8
65 and over				9
Education (highest grade)	x		41	1-6
(less than 8, = 8, 9-11, = 12, 13-15, 16 or over)				

* Transaction codes from ESARS Handbook, Chapter VI; program document MA311.

A.3 Productivity Computation and Report Generation Phase

Once the counts have been completed, the resulting count files are merged with the state level data and user-determined parameters and stored on disk. These data may be edited via remote terminal. Productivity reports based on the edited files may then be requested via remote terminal and reports printed in batch or held for terminal printout. Tables A-3 and A-4 show the file contents for the state level data and parameters files, respectively.

Reports are computed as follows. Table A-5 shows an example of the report with lines numbered to make it easier to relate computations to lines of the report. Values for lines 1 through 5 of any given value report and for each priority group are computed first. Method 1 computations are reported in Column 1, method 2 computations are reported in Column 2, and method 3 computations are reported in Column 3. For each computation, the symbols 1_i - 5_i indicate the line number within priority group i that the result is to be reported on. For method 1, lines 1_i and 2_i are not used. Line 3_i is computed as:

$$3_i = F_1 1X_{i1} + F_2 1X_{i2} + F_3 1X_{i3}$$

where the $1X_{ij}$'s are as defined in section A.1. For method 2, lines 1_i-3_i are computed as

$$1_i = F_1 2X_{i1} + F_2 2X_{i2} + F_3 2X_{i3}$$

$$2_i = F_4 2X_{i4}$$

$$3_i = 1_i + 2_i$$

TABLE A-3

State Level Data File

Card	Field	Data Element	Field Position	
1	1	FIPS Code	1-2	
1	2	State Name	4-15	
1	3	Region Code	17-18	
1	4	State Total Applicants, FY 74	20-26	
1	5	State Total Man Years, FY 74	28-34	two decimal places implied
1	6	State Total Current Costs, FY 74	36-43	
1	7	State Total Placements, FY 74	45-50	
1	8	Claims Cancelled due to work test failure, FY 74	52-58	
1	9	Average Claim Value in State, FY 74	60-66	
2	10	FIPS Code	1-2	
2	11	Total Unemployment Rate Calendar 73	7-10	four decimal places implied
2	12	Total White Unemployed Rate Calendar 73	12-15	four decimal places implied
2	13	White Adult Male Unemployed Rate Calendar 73	17-20	"
2	14	White Adult Female Unemployed, Rate Calendar 73	22-25	"
2	15	White Youth Unemployed Rate	27-30	"
2	16	Total Non-white Unemployed Rate	32-35	"
2	17	Non-white Adult Male Unemployed	37-40	"
2	18	Non-white Adult Female Unemployed Rate	42-45	"
2	19	Non-white Youth Rate	47-50	"
2	20	Weeks Saved due to Claim Denial Rate	52-55	"
2	21	Weeks Saved due to Placement Rate	57-60	"

TABLE A-4
Parameter File

Card	Parameter		
1	F_1	Expected duration in hours of 1-3 day placements	
1	F_2	Expected duration in hours of 4-150 day placements	
1	F_3	Expected duration in hours of > 150 day placements	
1	F_4	Search time savings, in hours	
1	F_5	intercept	earnings differential for individuals age 25-44
1	F_6	coefficient of unemp. rate	
1	F_7	intercept	earnings differential for individuals under 25, over 44
2	F_8	coefficient of unemp. rate	
2	F_9	intercept	earnings differential for non-whites
2	F_{10}	coefficient of unemp. rate	
2	F_{11}	intercept	earnings differential for high school graduates
2	F_{12}	coefficient of unemp. rate	
2	F_{13}	Priority weights, veterans	
2	F_{14}	Priority weights, UI, handicapped, female, non-white, poor, older	
3	F_{15}	Priority weights, youth	
3	F_{16}	Priority weights, all others	
3	F_{17}	Priority weights, (not used presently)	
3	F_{18}	deterrent factor for work tests	
3	F_{19}	deterrent factor for placements	
3	F_{20}	Indirect placement rate (as % of non-placed referrals)	
3	F_{21}	Not used	

TABLE A-5

LABOR EXCHANGE VALUE	METHOD 1	METHOD 2	METHOD 3
PRIORITY GROUP 1			
Direct Benefit Diff.	0.	609028.	0.
Direct Cost Diff.	0.	1577788.	0.
Direct Subtotal	15915212.	2186816.	3151339.
Indirect Subtotal	2163709.	292709.	420768.
Total Group	18078921.	2479525.	3572107.
PRIORITY GROUP 2			
Direct Benefit Diff.	0.	4195536.	0.
Direct Cost Diff.	0.	5157724.	0.
Direct Subtotal	53517683.	9353260.	10631830.
Indirect Subtotal	7217986.	1259444.	1442838.
Total Group	60735669.	10612704.	12074668.
PRIORITY GROUP 3			
Direct Benefit Diff.	0.	610619.	0.
Direct Cost Diff.	0.	527886.	0.
Direct Subtotal	4554928.	1138505.	28481.
Indirect Subtotal	601423.	150379.	3688.
Total Group	5156351.	1288884.	32168.
PRIORITY GROUP 4			
Direct Benefit Diff.	0.	470690.	0.
Direct Cost Diff.	0.	1537970.	0.
Direct Subtotal	15075935.	2008660.	1117061.
Indirect Subtotal	3034191.	269198.	145757.
Total Group	17099126.	2277858.	1262818.
PRIORITY GROUP 5			
Direct Benefit Diff.	0.	0.	0.
Direct Cost Diff.	0.	0.	0.
Direct Subtotal	0.	0.	0.
Indirect Subtotal	0.	0.	0.
Total Group	0.	0.	0.
TOTAL ALL GROUPS			
Unweighted	101070067.	16658971.	16941762.
Weighted	300013441.	49091365.	55411695.
Extrapolated U	3067740223.	491587843.	524153561.
Extrapolated W	9091565461.	1442840927.	1713088658.
---ENFORCEMENT VALUE---			
Claims Saved by Worktest	41277759.		
Claims Saved by Placements	36722747.		
Claims Saved Direct	78000506.		
Claims Deterred by Worktest	82555517.		
Claims Deterred by Placement	73445495.		
Claims Deterred	156001012.		
Total	234001518.		

TABLE A-5 (CONTINUED)

---TOTAL VALUES---			
Unweighted	3301741741.	725589361.	758155079.
Weighted	9325566979.	1676842445.	1947090176.
Total Costs	372999018.		
Total Manyears	21012.		
---PRODUCTIVITY---			
Labor Productivity:			
Unweighted Total	157138.	34533.	36082.
Weighted Total	443826.	79805.	92667.
Labor Exchange Unweighted	181119.	29023.	30946.
Labor Exchange Weighted	536764.	85185.	101140.
Enforcement Direct	19146.		
Enforcement Total	57437.		
TOTAL FACTOR PRODUCTIVITY			
Unweighted Total	8.85	1.95	2.03
Weighted Total	25.00	4.50	5.22
LABOR EXCHANGE UNWEIGHTED	10.20	1.63	1.74
Labor Exchange Weighted	30.24	4.80	5.70
Enforcement Direct	1.08		
Enforcement Total	3.24		

--- SAMPLE COUNTS ---		%GRP1	%GRP2	%GRP3	%GRP4	%GRP5
INDIVIDUALS	357742.00	15.99	66.68	3.91	13.42	0.0
INDIVIDUALS REFERRED	114584.00	14.61	63.36	5.66	16.37	0.0
INDIVIDUALS PLACED	60930.00	13.85	63.29	6.74	16.13	0.0
SERVICE TRANSACTIONS	1377415.00	15.64	68.53	3.58	12.25	0.0
REFER TRANSACTIONS	237546.00	17.46	62.45	4.61	15.47	0.0
PLACE TRANSACTIONS	95306.00	17.05	62.38	5.84	14.73	0.0
UI CLAIMANTS	92902.00	22.15	77.85	0.0	0.0	0.0
UI CLAIMANTS REFERRED	22217.00	22.76	77.24	0.0	0.0	0.0
UI CLAIMANTS PLACED	9866.00	23.28	76.72	0.0	0.0	0.0
UI CLAIMANT TRANSACTION	316796.00	22.68	77.32	0.0	0.0	0.0
UI REFERRAL TRANSACTION	50450.00	24.82	75.18	0.0	0.0	0.0
UI PLACEMENT TRANSACTION	15092.00	25.23	74.77	0.0	0.0	0.0
INDIV NOT PLACED BUT TRAINED	2562.00	6.91	85.64	3.01	4.45	0.0
INDIV NOT PLACED BUT COUNTED	13232.00	13.72	72.27	3.91	10.10	0.0

For method 3, lines 1_i and 2_i are not used. Line 3_i is

$$\begin{aligned} 3_i = {} & F_5 N_{i5} + F_6 U_{i5} + \\ & F_7 N_{i7} + F_8 U_{i7} + \\ & F_9 N_{i9} + F_{10} U_{i9} + \\ & F_{11} N_{i11} + F_{12} U_{i11} , \end{aligned}$$

where $U_{i5} - U_{i11}$ correspond to the $\underset{j}{\Sigma} U_{ij5}$ through $\underset{j}{\Sigma} U_{ij11}$ defined in Section A.1.

All remaining labor exchange computations are generated as follows. Line 4_j for each method is simply,

$$4_i = 1_i F_{20} \frac{(N_{ir} - N_{ip})}{N_{ip}}$$

and line 5_i is equal to $3_i + 4_i$. Then for each line the calculation is:

$$6 = \sum_{i=1}^{5} 5_i$$

$$7 = 5_1 F_{13} + 5_2 F_{14} + 5_3 F_{15} + 5_4 F_{16} + 5_5 F_{17}$$

$$8 = 6\ R, \text{ where } R = \frac{\text{Total applicants for this state}}{\text{Sample applicants for this state}}$$

Note that total applicants for the state is from State Table field 4; sample applicants is count total A for this state as described in Section A.1.

$$9 = 7\ R$$

Enforcement value computations are reported in lines 10 and 11. The computations are

$$10_a = VV\ DD_1\ CC$$

$$10_b = VV\ DD_2(\text{UI claimants placed})R$$

$$10_c = \text{Total } (10_a + 10_b),$$

where DD_1 is weeks of claim duration saved due to claim denial,

DD_2 is weeks of claim duration saved due to placement,

VV is average claim savings (fields 20, 21, and 9, respectively, of the state value table shown on Table A-3), and R is as defined above.

Computations for deterrent value are

$$11_a = F_{18}\ \ 10_a$$

$$11_b = F_{19}\ \ 10_b$$

$$11_c = 11_a + 11_b,$$

where F_{18} and F_{19} are the deterrent factors for claim denials due to work test failure and for placements of UI claimants, respectively (see Table A-4).

Remaining lines are

12 = 10_c + 11_c

13 = 8 + 12

14 = 9 + 12

15 = Costs, state table field 6.

APPENDIX G

ESTIMATION OF PARAMETER VALUE RANGES FOR ES PRODUCTIVITY SIMULATIONS

Simulations of ES labor exchange, enforcement and total program productivity by state, region and total U.S. were conducted to illustrate our productivity measurement methodology and also to test its sensitivity to different assumptions. These assumptions are treated in the simulation software as parameters which can be reset to reflect the alternative assumptions used. There are five parameter inputs: job duration, search time savings, indirect placement rates, priority weights, and enforcement deterrence factors. This working paper describes the evidence used to derive low, high and mid-range settings for each parameter. In addition, the resulting productivity estimates were compared with estimates produced by an econometrically derived earnings differential model developed by Arnold Katz. The last section of this working paper describes the model and its adaption for use with our sample data.

1.0 AVERAGE DURATION OF ES LONG TERM PLACEMENTS

An important element of our calculation of the value of ES placements is average duration. Data on the actual duration of placements is limited but we do have evidence on categories 4-150 days and over 150 days, which comes from a small pilot study conducted in six labor market areas in the spring and summer of 1974. The study in question is described by Harry Kuptzin in his internal DOL discussion paper "Estimated Dollar Value of ES Placements in FY 1974 Based on Special Study of Actual Duration of Placements." This study consisted of questioning a sample of 31,085 employers 30, 90, and 150 days after ES clients had been placed with them in April 1974 to determine how many of those placed on long term jobs were still employed and the reasons for leaving if they were not still employed. The results of this poll are shown in Table I. (Unfortunately, no distrinction was made in the survey between 4-150 day placements and placements over 150 days.)

Examination of these data revealed several salient characteristics. First, the pattern of retention was very similar in all of the six areas and roughly approximates an exponential decay function -- i.e., one in which a certain percentage of those employed at any point in time continue to remain employed in the following time period. The general form for this type of function is $F = e^{-at^b}$, where F

TABLE I

Six Area Job Retention Study Data

Area	Sample Size	Fraction Employed After: 30 Days	90 Days	150 Days	1974 UnEmp* Rate
Corpus Christi	294	.4830	.3061	.2551	.054
S.W. Missouri	914	.5427	.2866	.2374	.040
Topeka	481	.5655	.3599	.2522	.035
Harrisburg	589	.5942	.3447	.2954	.032
Las Vegas	307	.4788	.2378	.1954	.075
Portland	600	.6183	.3263	.2641	.055

* For SMSA when available, for state otherwise

is the fraction remaining at any time, t, and e is the base of natural logarithms; a and b are constants, and the percentage change in F per period may be derived as $-abt^{b-1}$.

An additional feature observed in the data is a distinct tendency for the percentage of those retained at each time period in each area to be negatively correlated with the 1974 unemployment rate in each area. This would indicate that unemployment may be an important variable to consider in calculating placement duration. Since the constant a in the equation above must be less than a and $\frac{dF}{da} < 0$, we incorporated unemployment in the equation as part of the exponential to generate the following more general estimating equation (u is the unemployment rate):

$$F = e^{-au^{c}t^{b}} \qquad (1)$$

This equation is, of course, nonlinear but can be readily reduced to linear form for purposes of statistical estimation as follows. ("ln" stands for natural logarithm):

$$\ln F = -au^{c}t^{b} \quad , \quad \ln F < 0 \qquad (2)$$

$$\ln(-\ln F) = \ln a + b \cdot \ln t + c \cdot \ln u \qquad (3)$$

Equation (3) was fit statistically to the 18 data points available (3 dates for each of six cities) resulting in the following parameter estimates (t values in parentheses):

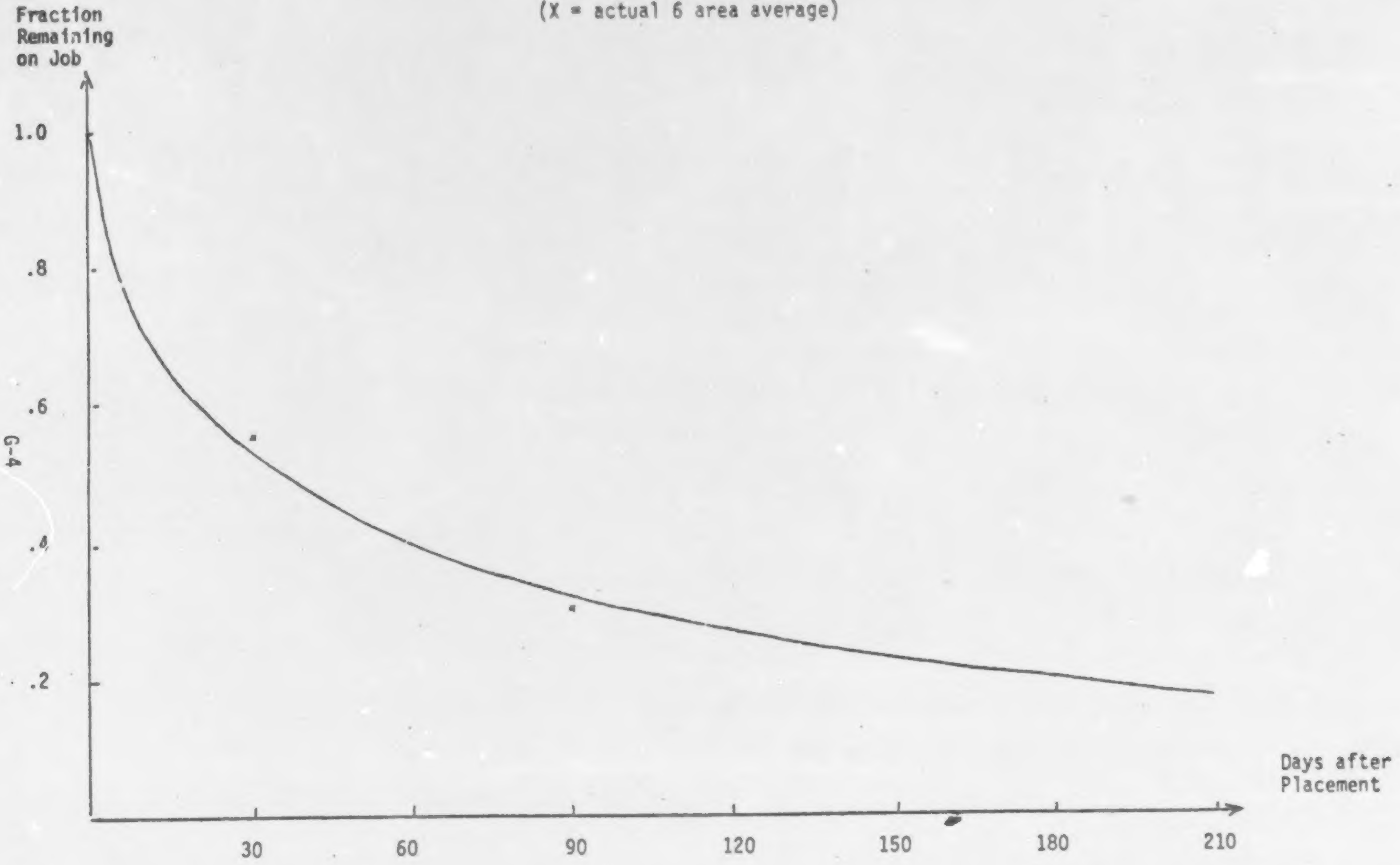
$$\begin{array}{lllll} \ln(-\ln F) = & -1.481 & + .5348 \ln t & + .2699 \ln u & \\ & (-4.5) & (13.4) & (3.0) & R^2 = .916 \end{array} \qquad (4)$$

A plot of this equation at an unemployment rate of 5.2% (the national average over the April-August period of 1974) is shown in Figure 1 along with the six city averages found in the Kaptzin data.

To determine the average duration of unemployment, it is then necessary to integrate Equation (2) over the desired ranges of t at the appropriate values of u and the constants a, b, and c. This was done at u = .052 and the values of a, b, and c estimated in Equation (4), yielding the results shown in Table II.

Figure 1

Plot of Estimated Equation
(X = actual 6 area average)



As Table II indicates, the average duration of employment of ES placees can be quite substantial if the retention function is integrated all the way to infinity. However, after six months the duration of employment is probably no longer attributable to ES, but is more attributable to the individual's own willingness to retain the job and perform at a level that makes the employer desire to retain him. In fact, many employers have a routine employee tenure review at the end of the first six months. Thus, for purposes of our estimation of the average duration of employment and calculation of the gross and net benefits of an ES placement, the integration should be truncated at 180 days. In our calculations we use 180 days as the most probable level for terminating the integration, and 90 and 360 days as the low and high levels, respectively. The corresponding job duration range is 257 to 565 hours, with a mid-point of 385 hours.

TABLE II

Average Duration of Placements at Various Times after Placement

Days after Placement	Avg. Calendar Days Worked	Hours Worked*
3	2.7	21½
15	11.5	68
30	20.2	115
90	45.0	257
180	67.5	385
1 year	98.8	565
∞	169.8	970

* Number of calendar weeks x 40.

2.0 SEARCH TIME SAVINGS

Our evidence on the savings in search time generated by ES is derived from three sources: a study by H.E. Felder on job search behavior[1] and two working drafts by Arnold Katz[2,3] on the influence of ES on unemployment duration.

The Felder study compared the impact of a number of variables, including search techniques used, on the duration of unemployment and the intensity of search measured in hours per week. The equation estimated indicated that the use of ES as a search method actually increased the duration of unemployment of males in the sample by as much as 11.5 days and of females by 3.76 days, although the latter coefficient was less than half its standard error and insignificant. Search intensity by males was increased five hours per week for men and essentially unaffected for women.

Virtually opposite conclusions were reached by Katz, who found that while those who relied on ES as a primary search mode had longer periods of unemployment, this phenomenon was due primarily to differences in the personal characteristics of ES users. When the differences in socioeconomic characteristics of ES clients and other searchers were properly accounted for, the mean duration of unemployment of ES clients compared very favorably with the duration of those using other modes of search. In one of his drafts (Footnote 2 below), Katz concluded that ES shortens unemployment by as much as two weeks when compared to the use of newspaper ads as a primary information source. In his other study using different data and a different technique, Katz determined that ES shortens the unemployment duration of its clients by one to five weeks depending on the length of the period of unemployment (long term unemployed benefitted from larger reductions).

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[1] Felder, Henry E., "Job Search: An Empirical Analysis of the Search Behavior of Low Income Workers", Stanford Research Institute Research Memorandum 25, May, 1975.

[2] Katz, Arnold, "Analysis of Boston CES Sample...", unpublished mimeo, 1975.

[3] Katz, Arnold, "Measures of ES Influence on the Length of Unemployment: Conceptual Issues and Preliminary Findings", unpublished mimeo, September, 1975.

Aside from differences in data sources (Felder used 1970 data for Denver, Katz used somewhat more recent data from Pennsylvania and Boston), it appears that the different conclusions of these authors derive primarily from the methodologies used. The studies differed in the degree to which they corrected for socioeconomic characteristics of individuals, and also in the type of population studied. Felder analyzed all individuals who used ES, not just those placed by ES, while in his Pennsylvania study, Katz analyzes individuals for whom ES was considered the main job source. Katz corrects for both demographic effects and for length of unemployment prior to ES use. For these reasons, we put more confidence in Katz' results. Felder's work, however, does indicate that some caution is in order in ascribing too large a search saving to ES.

Felder's analysis is also valuable in its determination that search time cannot strictly be equated with unemployment duration. Individuals who are unemployed do not necessarily spend all of their time in search; men searched an average of about 20 hours per week and women about 14 hours. The combined average was 18 hours per week.

While Katz' methodology lends more weight to his conclusions than Felder's, we cannot reject the hypothesis that in some instances search time is actually increased by use of the ES. This hypothesis is, after all, perfectly consistent with the assumption that wealth-maximizing individuals view search as an investment and will invest more if justified by the expected returns. Unfortunately, methodological incompatibilities prevent us from using data on the returns to search to explain the differences between Felder's and Katz' results. Felder's results on payoff to ES users, in fact, are insignificant and negative, which only increases the inconsistency with Katz' results.

For the methodological reasons mentioned, we are inclined to give more weight to Katz' results. Katz concludes in both studies that search time savings are about 2½ weeks. We shall use this estimate as an upper bound, and for lack of a better estimate use "0" as the lower bound. Since Felder finds that actual search time amounts to approximately 18 hours per elapsed week, we will then set the range for this parameter in our simulations between zero and 45 hours, with a mid-point of 23 hours.

In summary, the evidence on ES search cost savings is sparse and inconsistent. Clearly, this is an area which could stand more empirical analysis.

3.0 INDIRECT PLACEMENT RATES

The simulation program accepts indirect placement rates as a percentage of non-placed job referrals. In Chapter 3, using the Missouri experience as a basis, we estimated that indirect placements nationally for FY 1974 fell within the range of 138,000 to 410,000. Non-placed referrals for the U.S. in FY 1974 were 2,735 thousand. Translated to percentages of non-placed referrals, the range of indirect placements is .05 to .15. These rates form our lower and upper bound parameter settings for the indirect placement rate parameter. The simple mean, .10, is selected as the mid-point setting.

4.0 PRIORITY WEIGHTS

We have used the target weights directly from the FY 1976 BPF Handbook for initial priority weight settings. These weights are:

Veterans - 5

Non-White, Female, Older, Poor,
UI Claimants, Handicapped - 3

Youth - 2

Other - 1

The weights are applied only to labor exchange output. Thus, the weights taken from the BPF Handbook not only weight placements of certain target populations higher than others; they also have the effect of weighting the average dollar value of placement outputs higher than that of enforcement outputs. It is possible to adjust weights so that the average enforcement output is weighted equally with labor exchange outputs by scaling the weights down so that the weighted sum of labor exchange outputs is equal to the unweighted sum.

5.0 DETERRENCE FACTOR FOR UI DENIALS DUE TO REFUSAL OF WORK

As discussed in Chapter 4.0 and Appendix D, UI denials for refusal of suitable work have an unambiguous deterrent effect both on current claimants -- whose claims are shortened -- and on individuals who are discouraged from filing claims at all. Our estimates imply that one denial for refusal to work reduces total claim liabilities by around 150 weeks. On average, the maximum liability per individual denied is about 24 weeks. Using this figure as an estimate of the direct effect of a denial on total weeks of claim liability, a conservative estimate of the deterrent effect is 126 weeks and the ratio of the deterrent impact to the direct denial impact is 126 to 24, or about 5 to 1. This result is more than twice the deterrent ratio estimated by Holen and Horowitz, who found that UI claim denials for all reasons (not just refusal to work) tended to reduce claimant populations by about two additional persons. At least part of the explanation for the difference in these two estimates of the deterrent ratio is methodological. Our analysis measured weeks saved rather than simply individuals deterred. In fact, our estimate of individuals deterred by an incremental denial was much higher than 2, being in the range of 12 to 14, which implies even more of a disparity between the estimates. A more important difference is that our analysis focused only on claims denied due to refusal of suitable work, while that of Holen and Horowitz covered denials for all reasons. Since refusal of work is more likely to be evidence of purposeful intent to "beat the system" than other reasons for claim denial, it is not unreasonable to expect that the extent to which it is enforced will have a stronger deterrent impact than other types of denial.

In order to keep the simulations conservative in estimating the productivity of ES enforcement activities, we shall use the Holen and Horowitz estimate of 2 as a lower bound for simulation purposes and our estimate of 5 as an upper bound. The mid-range parameter value is 3.75.

6.0 EARNINGS DIFFERENTIAL FORMULA COEFFICIENTS

An alternative placement value formula used in the simulations estimates earnings differentials attributed to ES placement of an individual as a function of age, sex, race and educational characteristics of the individual placed. This formula was used to provide a check on the estimates generated by our methodology. The formula computes the differential as,

$a_1 + b_1(u_1)$ for individuals aged 25-44,

or $a_2 + b_2(u_2)$ for individuals under 25 and over 44,

plus $a_3 + b_3(u_3)$ increment for non-white,

plus $a_4 + b_4(u_4)$ increment for high school graduates.

The variable u is an unemployment rate associated with the characteristics of the individual. The parameters a_1, b_1 may be adjusted to reflect alternative assumptions about the behavior of earnings differentials generated by use of ES.

Some evidence on earnings enhancement from the use of ES by job seekers has been produced by Arnold Katz, who reported findings based on analysis of ESARS CWBH matched files for Pennsylvania for individuals who used the ES in the second half of 1972 and the first half of 1973. Katz ran two sets of regressions for each group. In the first set, the change in annual earnings over the prior period was regressed on individual characteristics and on the type of service obtained. These results are shown in Katz' Table 2, reproduced below. The coefficient of placement in this regression must be interpreted as an average income enhancement for all individuals. The unemployment rates in Pennsylvania for the last half of calendar 1972 and the first half of 1973 were .0495 and .0518, respectively, (based on data provided to us by the Pennsylvania SESA). Using Katz' two estimates of the differential, we can define two equations

Table 2

Components of Earnings Change: Men

	ES Applicant:		
Earnings change:	2nd half 1972 1971-1973 (A)	1st half 1973 1972-1974 (B)	FY 1973 1971-1974 (C)
Explanatory variables:			
Age:			
X_1: 25-44	-1374^{**}	-1367^{**}	-2064^{**}
X_2: 45+	-2996^{**}	-3114^{**}	-3877^{**}
Race:			
X_3: nonwhite	-275^{*}	+244	-158
Schooling:			
X_4: high school	$+292^{*}$	+172	$+594^{**}$
S_1: Placement or referral	$+289^{*}$	$+577^{**}$	-2
S_2: Other services	-257	+44	+84
Constant	+2134	+2001	+2541

**Significant at .05 or better

*difference is greater than standard error

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in two unknowns relating the estimated differential to the unemployment rate

$$1972: \quad 289 = a + b(.0495)$$

$$1973: \quad 577 = a + b(.0518)$$

Solving for a and b yields

$$\text{Earnings Diff.} = -5{,}909 + 125{,}217\ (u)$$

This formula is consistent with the hypothesis advanced in earlier working papers that, on the average, the value of a placement varies positively with the unemployment rate. Furthermore, the formula indicates that when the unemployment rate exceeds 4.7%, the net benefit generated by ES for an individual is positive. However, the formula aggregates over all applicant characteristics, and therefore, may mask significant differences. Also, the 1973 estimate is only marginally significant and does not lead us to place a great deal of confidence in the parameter values of this derived earnings difference formula.

Katz also estimated earnings changes by specific demographic characteristics among individuals referred or placed and "nominal applicants" -- those not receiving any service beyond intake. These results are shown in Katz' Table 3, also reproduced below. From these results, we can impute earnings differentials attributable to use of ES by subtracting the estimated earnings changes for "nominal applicants" from the respective estimates for placements and referrals. In this way we obtain

	2nd Half of 1972	1st Half of 1973
Age 25-44	-557	425*
45 +	1299*	1081*
Non-white	-557	-427
High School Graduate	366*	375

where the numbers with asterisks are derived from estimates significant at the 5% level. We can use these differentials together with the respective unemployment rates for these groups to derive a relationship between earnings differentials and the unemployment rates. Since we cannot with confidence interpret either of the non-white estimates or the 1972 age 25-44 estimate as

Table 3

Earnings Change: Placements or Referrals vs. Nominal Applicants

ES Applicant Earnings change:	2nd half 1972 1971-1973 (A)	1st half 1973 1972-1974 (B)
Placements or referrals:		
25-44	+354	+1078*
45+	+338*	-95*
Nonwhite	+1491	+2046
High school graduate	+2777*	2602*
Nominal applicants:		
25-44	+911	+653*
45+	-961*	-1176*
Nonwhite	+2048	+2473
High school graduate	+2411*	+2227*

*Differences between placements or referrals and nominal applicants are significant at .05, or better.

being significantly different from zero, we shall consider these estimates equal to zero for purposes of deriving relationships between the estimated earnings differentials and the unemployment rate. This result implies that at unemployment rates above 4.9%, the ES begins to make a positive net contribution to earnings of 25-44 year olds. For older workers, while both estimates are significant, the difference between them is not. Hence, we shall use the average of the two as an intercept and treat the coefficient of the unemployment rate as zero for this group. Similarly, the estimates for high school graduates do not appear to be significantly different from each other so the same procedure will be followed with these. Using the same rates as before, the resulting equations for earnings differentials are

Age 25-44	d =	-9147	+	184,783	(u), or
45 +		1190	+	0	(u), plus
if non-white		0	+	0	(u), plus
if High School Grad.		370	+	0	(u)

The formula for non-whites indicates that there is no significant difference in the earnings differential generated by ES for non-whites as compared to others in their respective age groups. We note also that the implied increments for both older individuals and high school graduates are insentitive to the unemployment rate. In other words, while the evidence tends to support a positive relationship between unemployment and ES productivity on average, the relationship does not hold for all subgroups. One interpretation of this anomaly is that the 25-44 age group is basically employable in situations of marginal unemployment simply on the strength of their own contacts and information sources. Beyond that point, the additional information offered by ES has some value for these individuals. For older workers, it may be that their own contacts are not ever as good as those available through ES. Such individuals may always have poorer access to job information on their own than through the ES.

Again, the limited scope of the data used by Katz and the statistical characteristics of his findings limit the usefulness of his results chiefly to illustrating the net benefit phenomenon and providing a check of reasonability on the simplified evaluation technique we use in computing placement value. Bearing in mind that this is the purpose of using these results, then, we have three alternatives for applying them. The first simply applies the aggregate results, giving parameter values of

$$a_1 = a_2 = -5909; \quad b_1 = b_2 = 125{,}217 \text{ and}$$

$$a_3 = a_4 = b_3 = b_4 = 0.$$

The second alternative applies all the disaggregated results:

$$a_1 = -9147 \qquad b_1 = 184{,}783$$

$$a_2 = 1190 \qquad b_2 = 0$$

$$a_3 = 0 \qquad b_3 = 0$$

$$a_4 = 670 \qquad b_4 = 0$$

Since values a_1 and b_1 are derived from a pair of estimates for which one point is bounded by very wide confidence limits, these values themselves offer less confidence than the others. Hence, a third possibility is

$$a_1 = 0 \qquad b_1 = 0$$

$$a_2 = 1190 \qquad b_2 = 0$$

$$a_3 = 0 \qquad b_3 = 0$$

$$a_4 = 670 \qquad b_4 = 0$$

APPENDIX H

ES PRODUCTIVITY ESTIMATES BASED ON AVAILABLE DATA: EMPIRICAL RESULTS AND SENSITIVITY TO UNCERTAINTY

1.0 INTRODUCTION

As discussed in Chapter 6, the measurement methodology developed during the present project was applied to available data in order to:

- Illustrate the methodology.
- Determine what conclusions could be reached about the productivity of the ES in both an absolute and relevant sense.
- Determine the sensitivity of estimates to uncertainties about available data and research findings in order to help prioritize future research needs.

Estimation and sensitivity analysis were carried out using simulation software developed for this purpose and described in Appendix F. The model is designed to estimate the report output value for the system as a whole and for the two types of activity which we have found to be most important: labor exchange and enforcement. These values are calculated in a gross sense and then compared with reported costs and resource utilization to generate net economic benefit or productivity estimates. The reports may be re-run using altered assumptions by resetting quality parameter values related to job duration, search cost savings, indirect placements, and enforcement deterrent effects.

Labor exchange output value estimates are generated by the application of productivity formulas to the ESARS 2% sample data. Resulting estimates are adjusted to reflect indirect placements. Enforcement output values are generated from UI claim denials, claim values, and claim durations combined with extrapolated data from the ESARS 2% sample on ES placement activity on behalf of UI claimants. Cost and resource data are state totals for the appropriate fiscal year. All estimations are performed both with and without priority weights reflecting distributional objectives of the ES.

Data sources are described in Section 2 and estimates of total output value and productivity per dollar of current appropriation are presented in subsequent sections. Section 3 discusses midrange estimates, and Sections 4 and 5 discuss sensitivity of estimates to uncertainty. Detailed data inputs and results are described in Appendices H-1, H-2 and H-3.

2.0 DATA SOURCES AND COVERAGE

Data sources used to generate estimates of simulation parameters are described in Appendix G. Two other types of data were used. There was a 2% sample of detailed applicant records from state ESARS data files and data aggregated to the state level for various other data elements. The largest input file was the ESARS 2% sample for 1974. This extensive sample (over 350,000 individual records) is operational on the BCS IBM 370 at Kent, Washington. The file is a random sample of all available applicant records from the state ESARS data files created by merging applicant characteristics and service records. We found two problems with the file: The first problem was coverage. Due to sampling and file submission errors, the fiscal year 1974 sample did not contain data from Delaware, Louisiana, Nevada, New Mexico, Puerto Rico, Rhode Island, or Tennessee. Our results do not include any estimates for these states. Total current operating expenses from ES grant funds* for fiscal 1974 were $395 million. The missing states account for $22 million, or about 5.5% of the total expenditures. In addition, the file does not allow us to identify UI claimants in four other states: Massachusetts, Nebraska, New York and Washington. Enforcement computations for these states were added by hand. Results of the computations at shown in Table 2.1 and have been added to listings of results contained in Appendix H-3. In order to split costs between the labor exchange and enforcement activities for these states, the proportion of UI to total placements was used.

With these exceptions, the sample appears to be a good representation of the total. Table 2.2 shows a comparison of sample counts with total data for the same 44 states, plus D.C. The percentages of placements and claimants placed are within 0.2% or each other and sample percentages of all counts are between 2.1 and 2.2 percent.

State level data are all for fiscal year 1974 except unemployment rate data which are based on calendar 1973 figures. Included are total applicants for state, total manyears, total current expenditures, total placements, claims cancelled due to work test failure, average UI claim value, and the state's total unemployment rate, unemployment rates by race, sex and age, weeks saved due to claim denials and weeks saved due to placements. The actual data used in the state level data file and in the parameter files for the seven simulation runs are contained in Appendices H-1 and H-2, respectively.

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*Fund Codes 92054, 92064, 92174 and 92114.

3.0 ESTIMATED BENEFITS AND IMPLICATIONS

3.1 Direct and Indirect Benefit Estimates

Tables 3.1, 3.2 and 3.3 present on a state by state basis the mid-range, low range, and high range calculations using the methodology described in Chapter 6. Sub-total amounts are shown for both direct and indirect benefits, and the sum of all benefits for each state. For the total of all states included in the analysis, the percentage distribution of direct and indirect benefits is also shown.

3.2 Benefit/Cost Ratios - Mid-Range Values

Table 3.4 shows total ES benefits by state from Table 3.1, the mid-range estimates and corresponding FY 1974 ES appropriation. From total benefits and appropriations (costs), a benefit/cost ratio has been calculated and an ordering of states by highest "return" (ES benefits) to costs. The average return for states shown here in 1.818. Similar ratios for high and low range estimates are computed in Section 3.3.

3.3 Implications for Net Economic Impact of the Employment Service

Table 3.5 shows estimated rates of return in total and by major function (labor exchange and enforcement). Results shown are the aggregates of the forty-five states shown in Tables 3.1, 3.2 and 3.3. Three columns are shown for each estimate, representing the results using parameters set at the mid-point, the maximum and minimum values. Rows in parentheses show results for unweighted labor exchange and total productivity using an econometrically derived earnings differential model to estimate labor exchange benefits.* Table 3.5 and all subsequent tables are summaries of detailed results contained for each measure by state in Appendix H-3 and broken down between direct and indirect values in Tables 3.1, 3.2 and 3.3.

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*This model is described in Appendix G.

TABLE 3.1
ENFORCEMENT DATA FOR FOUR STATES

FISCAL 1974 STATE TOTALS*

	(3)	(38)	(8)	(51)
65 FIPS Code	Mass.	Neb.	NY	Wash.
APS	280,650	74,736	674,420	194,540
UI APS	117,410	23,018	248,020	57,820
UI PLCD	10,058	5,316	33,684	7,949
Total PLCD	56,729	29,221	172,240	76,612
UI APS %	41.8	30.8	38.3	29.7
UI PL/PL	17.7	18.2	19.6	10.9
Average Claim Value	66.98	56.74	61.56	63.49
Weeks Saved Due to Placement	2	2	2	2
Average Placement Saving	133.96	113.48	123.12	126.98
Total Placement Saving	$1,347,370	$603,260	$4,147,174	$1,009,364

* Source: FY 1976 BPF Worksheet Data

TABLE 3.2

COMPARISON OF ESARS 2% SAMPLE WITH REPORTED TOTALS

	2% Sample [a]	ESARS Totals[b] FY 1974	Sample %
Applicants Available[c]	357,742	16,387,058	2.2%
Individuals Placed	60,930	2,838,992	2.1%
(% of Aps. Avail)	(17.0)	(17.3)	
UI Claimants Placed[d]	11,178	515,022[d]	2.2%
(% Placements)	(18.3)	(18.1)	
Service Transactions	1,377,415	N.A.	
Placement Transactions	95,306	4,454,000	2.1%
(% Service Trans)	(6.9)	N.A.	

a. Covers 45 states accounting for 95% of expenditures. Missing states are Delaware, Louisiana, Nevada, New Mexico, Puerto Rico, Rhode Island, and Tennessee.

b. For same 45 states only. The excluded states in FY 1974 accounted for 225,508 placements; 38,871 UI placements; 354,000 placement transactions; and 1,336,589 available applicants.

c. Applicants available are the sum of new applicants and renewals.

d. Also excludes Massachusetts, New York, Nebraska, and Washington, which accounted for 57,007 UI placements.

TABLE 3.1

ESTIMATION OF EMPLOYMENT SERVICE BENEFITS BY STATE - MID RANGE
FISCAL YEAR 1974

($ Millions)

	Direct Benefits				Indirect Benefits				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	UI Savings								
	Placement Value	UI Placements	Work Test Denials	Total Direct Benefits	Search Cost Savings	Indirect Placements	Work Test Deterrent Value	Total Indirect	Total Direct & Indirect
ALABAMA	3.553	1.201	.193	4.947	3.093	.300	.724	4.117	9.064
ALASKA	2.078	.255	.067	2.400	.639	.110	.251	1.000	3.400
ARIZONA	2.442	1.035	.174	3.651	4.040	.222	.652	4.914	8.565
ARKANSAS	3.537	.496	.198	4.231	4.482	.214	.742	5.438	9.669
CALIFORNIA	27.845	14.495	4.332	46.672	17.980	2.656	16.245	36.881	83.554
COLORADO	1.592	.658	.221	2.471	3.916	.141	.828	4.885	7.356
CONNECTICUT	2.134	1.236	2.365	5.735	1.042	.376	8.869	10.287	16.022
DISTRICT OF COLUMBIA	6.347	.262	.040	6.649	2.869	.376	.150	3.395	10.042
FLORIDA	6.762	.879	.384	8.025	8.280	.717	1.440	10.437	18.463
GEORGIA	5.209	.909	.059	6.177	4.102	.318	.221	4.641	10.819
HAWAII	1.248	.588	.396	2.232	.451	.167	1.483	2.101	4.332
IDAHO	1.728	.574	.290	2.592	1.483	.105	1.087	2.675	5.268
ILLINOIS	19.823	2.500	1.321	23.644	11.979	1.554	4.953	18.486	42.129
INDIANA	7.376	1.594	.806	9.776	4.419	.712	3.024	8.155	17.932
IOWA	3.634	1.418	.222	5.274	4.755	.192	.835	5.782	11.056
KANSAS	1.828	.900	.439	3.167	2.514	.153	1.646	4.313	7.481
KENTUCKY	4.056	.705	.374	5.135	2.789	.232	1.403	4.424	9.560
MAINE	.871	.518	.463	1.852	.677	.079	1.735	2.491	4.342
MARYLAND	.965	.532	3.086	4.583	1.012	.086	11.572	12.670	17.254
MASSACHUSETTS	6.130	1.347	.670	8.147	5.011	.542	2.512	8.065	16.211
MICHIGAN	7.880	2.582	3.504	13.966	5.150	.927	13.141	19.218	33.185
MINNESOTA	3.351	1.626	.682	5.659	3.131	.287	2.557	5.975	11.634
MISSISSIPPI	4.708	.567	.287	5.562	3.956	.220	1.076	5.252	10.814
MISSOURI	7.980	2.213	.592	10.785	4.938	.546	2.220	7.704	18.491
MONTANA	1.911	.567	.036	2.514	1.473	.038	.135	1.646	4.162
NEBRASKA	2.141	.603	.087	2.831	2.443	.160	.327	2.930	5.760
NEW HAMPSHIRE	.503	.266	.338	1.107	.518	.075	1.267	1.860	2.967
NEW JERSEY	5.854	2.326	1.315	9.495	5.508	.607	4.932	11.947	20.542
NEW YORK	20.048	4.147	5.302	29.497	35.744	2.002	19.883	57.629	87.126

TABLE 3.1(Cont)

ESTIMATION OF EMPLOYMENT SERVICE BENEFITS BY STATE - MID RANGE FISCAL YEAR 1974

($ Millions)

	Direct Benefits				Indirect Benefits				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	UI Savings								
	Placement Value	UI Placements	Work Test Denials	Total Direct Benefits	Search Cost Savings	Indirect Placements	Work Test Deterrent Value	Total Indirect	Total Direct & Indirect
NORTH CAROLINA	3.852	.334	1.336		4.529	.389	5.008	9.926	15.448
NORTH DAKOTA	1.572	.333	.050	1.955	1.420	.094	.189	1.703	3.659
OHIO	4.934	2.901	1.778	9.613	5.027	.610	6.665	12.302	21.916
OKLAHOMA	3.301	.789	.143	4.233	6.010	.198	.538	6.746	10.979
OREGON	3.268	.935	.371	4.574	3.489	.268	1.391	5.148	9.722
PENNSYLVANIA	9.799	4.568	4.706	19.073	7.539	.810	17.648	25.997	45.072
SOUTH CAROLINA	2.989	1.241	.506	4.736	1.997	.338	1.897	4.232	8.968
SOUTH DAKOTA	.781	.314	.002	1.097	1.521	.052	.007	1.580	2.677
TEXAS	13.875	6.556	.779	21.210	14.960	1.453	2.921	19.334	40.542
UTAH	2.617	1.140	.614	4.371	2.077	.251	2.302	4.630	9.000
VERMONT	.552	.480	.106	1.138	.400	.075	.398	.873	2.010
VIRGINIA	2.568	.685	.533	3.786	2.615	.181	1.999	4.795	8.580
WASHINGTON	5.259	1.009	.273	6.541	5.246	.422	1.024	6.692	13.232
WEST VIRGINIA	2.013	.442	.176	2.631	1.498	.132	.660	2.290	4.922
WISCONSIN	8.688	1.423	1.658	11.769	8.419	.897	6.218	15.534	27.303
WYOMING	.737	.176	.005	.918	1.137	.003	.019	1.189	2.107
Subtotals	226.755	70.329	41.278	338.362	220.088	20.098	154.792	394.978	733.340
Percentage Distribution of Total Benefits...	30.9	9.6	5.6	46.1	30.0	2.7	21.1	53.9	100.0

Missing States: DELAWARE, LOUISIANA, NEVADA, NEW MEXICO, PUERTO RICO, RHODE ISLAND, TENNESSEE, VIRGIN ISLANDS, GUAM

TABLE 3.2
ESTIMATION OF EMPLOYMENT SERVICE BENEFITS BY STATE - LOW RANGE
FISCAL YEAR 1974

($ Millions)

	Direct Benefits				Indirect Benefits				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	UI Savings								
	Placement Value	UI Placements	Work Test Denials	Total Direct Benefits	Search Cost Savings	Indirect Placements	Work Test Deterrent Value	Total Indirect	Total Direct & Indirect
ALABAMA	2.623	1.201	.193	3.017	-	.110	.386	.496	4.513
ALASKA	1.533	.255	.067	1.855	-	.040	.133	.173	2.028
ARIZONA	1.797	1.035	.174	3.006	-	.082	.348	.430	3.435
ARKANSAS	2.605	.496	.198	3.299	-	.079	.396	.475	3.774
CALIFORNIA	20.521	14.495	4.332	39.348	-	.979	8.664	9.643	48.991
COLORADO	1.166	.658	.221	2.045	-	.052	.441	.493	2.539
CONNECTICUT	1.579	1.236	2.365	5.189	-	.138	4.730	4.868	10.048
DISTRICT OF COLUMBIA	4.691	.262	.040	4.993	-	.139	.080	.219	5.212
FLORIDA	4.991	.879	.384	6.254	-	.264	.768	1.032	7.286
GEORGIA	3.853	.909	.059	4.821	-	.118	.118	.236	5.058
HAWAII	.922	.588	.396	1.906	-	.062	.791	.853	2.758
IDAHO	1.277	.574	.290	2.141	-	.039	.580	.619	2.759
ILLINOIS	14.642	2.500	1.321	18.463	-	.574	2.641	3.215	21.678
INDIANA	5.453	1.594	.806	7.853	-	.263	1.613	1.876	9.729
IOWA	2.677	1.418	.222	4.317	-	.071	.445	.516	4.834
KANSAS	1.343	.900	.439	2.682	-	.057	.878	.936	3.617
KENTUCKY	3.000	.705	.374	4.079	-	.086	.749	.835	4.914
MAINE	.644	.518	.463	1.625	-	.029	.925	.954	2.579
MARYLAND	.714	.532	3.086	4.332	-	.032	6.172	6.204	10.536
MASSACHUSETTS	4.534	1.347	.670	6.551	-	.200	1.339	1.539	8.090
MICHIGAN	5.815	2.582	3.504	11.901	-	.342	7.009	7.351	19.252
MINNESOTA	2.473	1.626	.682	4.781	-	.105	1.364	1.469	6.251
MISSISSIPPI	3.481	.567	.287	4.335	-	.082	.574	.656	4.991
MISSOURI	5.894	2.213	.592	8.699	-	.207	1.184	1.391	10.090
MONTANA	1.407	.567	.036	2.010	-	.014	.072	.086	2.096
NEBRASKA	1.579	.603	.087	2.269	-	.058	.174	.232	2.501
NEW HAMPSHIRE	.372	.266	.338	.976	-	.028	.676	.704	1.680
NEW JERSEY	4.295	2.326	1.315	7.936	-	.228	2.630	2.858	10.794
NEW YORK	14.655	4.147	5.302	24.102	-	.731	10.604	11.335	35.440

TABLE 3.2(Cont)

ESTIMATION OF EMPLOYMENT SERVICE BENEFITS BY STATE - LOW RANGE FISCAL YEAR 1974

($ Millions)

	Direct Benefits				Indirect Benefits				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	UI Savings								
	Placement Value	UI Placements	Work Test Denials	Total Direct Benefits	Search Cost Savings	Indirect Placements	Work Test Deterrent Value	Total Indirect	Total Direct & Indirect
NORTH CAROLINA	2.850	.334	1.336	4.520	-	.143	2.671	2.814	7.334
NORTH DAKOTA	1.160	.333	.050	1.543	-	.035	.101	.136	1.679
OHIO	3.639	2.901	1.778	8.318	-	.225	3.555	3.780	12.098
OKLAHOMA	2.409	.789	.143	3.341	-	.072	.287	.359	3.700
OREGON	2.412	.935	.371	3.718	-	.099	.742	.841	4.559
PENNSYLVANIA	7.243	4.568	4.706	16.517	-	.299	9.413	9.712	26.229
SOUTH CAROLINA	2.209	1.241	.506	3.956	-	.125	1.012	1.137	5.093
SOUTH DAKOTA	.574	.314	.002	.890	-	.019	.003	.022	.912
TEXAS	10.221	6.556	.779	17.556	-	.535	1.557	2.092	19.648
UTAH	1.932	1.140	.614	3.686	-	.092	1.228	1.320	5.006
VERMONT	.408	.480	.106	.994	-	.028	.212	.240	1.234
VIRGINIA	1.898	.685	.533	3.116	-	.067	1.066	1.133	4.249
WASHINGTON	3.877	1.009	.273	5.159	-	.155	.546	.701	5.860
WEST VIRGINIA	1.489	.442	.176	2.107	-	.049	.352	.401	2.508
WISCONSIN	6.415	1.423	1.658	9.496	-	.331	3.316	2.647	13.143
WYOMING	.544	.176	.005	.725	-	.012	.010	.022	.747
Sub-Totals	169.814	70.328	41.279	281.421	-	7.499	82.556	90.055	371.476
Percentage Distribution of Total Benefits...	45.7	18.9	11.1	75.8		2.0	22.2	24.2	100.0

Missing States: DELAWARE, LOUISIANA, NEVADA, NEW MEXICO, PUERTO RICO, RHODE ISLAND, TENNESSEE, VIRGIN ISLANDS, GUAM

TABLE 2.3
ESTIMATION OF EMPLOYMENT SERVICE BENEFITS BY STATE - HIGH RANGE
FISCAL YEAR 1974

($ Millions)

	Direct Benefits				Indirect Benefits				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	UI Savings								
	Placement Value	UI Placements	Work Test Denials	Total Direct Benefits	Search Cost Savings	Indirect Placements	Work Test Deterrent Value	Total Indirect	Total Direct & Indirect
ALABAMA	5.216	1.201	.193	6.610	6.187	.660	.964	7.811	14.421
ALASKA	3.050	.255	.067	3.372	1.278	.241	.334	1.853	5.225
ARIZONA	3.585	1.035	.174	4.794	8.080	.488	.869	9.437	14.231
ARKANSAS	5.193	.496	.198	5.887	8.964	.471	.990	10.425	16.312
CALIFORNIA	40.876	14.495	4.332	59.703	35.960	5.851	21.660	63.471	123.174
COLORADO	2.337	.658	.221	3.216	7.832	.311	1.105	9.248	12.464
CONNECTICUT	3.133	1.236	2.365	6.734	2.085	.826	11.825	14.736	21.470
DISTRICT OF COLUMBIA	9.315	.262	.040	9.617	5.737	.827	.199	6.763	16.380
FLORIDA	9.925	.879	.384	11.188	16.561	1.579	1.921	20/061	31.249
GEORGIA	7.645	.909	.059	8.613	8.204	.699	.296	9.199	17.812
HAWAII	1.832	.588	.396	2.816	.901	.366	1.978	3.245	6.061
IDAHO	2.537	.574	.290	3.401	2.967	.232	1.449	4.648	8.049
ILLINOIS	29.095	2.500	1.321	32.916	23.959	3.421	6.603	33.983	66.899
INDIANA	10.825	1.594	.806	13.225	8.839	1.566	4.032	14.437	27.662
IOWA	5.335	1.418	.222	6.795	9.511	.423	1.113	11.047	18.022
KANSAS	2.669	.900	.439	4.008	5.042	.338	2.196	7.576	11.584
KENTUCKY	5.952	.705	.374	7.031	5.578	.511	1.872	7.961	14.993
MAINE	1.278	.518	.463	2.259	1.355	.173	2.313	3.841	6.100
MARYLAND	1.416	.532	3.086	5.034	2.025	.190	15.429	17.644	22.678
MASSACHUSETTS	8.997	1.347	.670	11.014	10.021	1.194	3.348	14.563	25.576
MICHIGAN	11.567	2.582	3.504	17.653	10.300	2.043	17.521	29.864	47.518
MINNESOTA	4.919	1.626	.682	7.227	6.261	.631	3.410	10.302	17.530
MISSISSIPPI	6.910	.567	.287	7.764	7.912	.485	1.434	9.831	17.594
MISSOURI	11.703	2.213	.592	14.508	9.868	1.229	2.960	14.057	28.565
MONTANA	2.806	.567	.036	3.409	2.947	.084	.180	3.211	6.621
NEBRASKA	3.143	.603	.087	3.833	4.885	.351	.436	5.672	9.505
NEW HAMPSHIRE	.739	.266	.338	1.343	1.036	.164	1.689	2.889	4.233
NEW JERSEY	8.585	2.326	1.315	12.226	11.004	1.366	6.576	18.946	31.172
NEW YORK	29.447	4.147	5.302	38.896	71.485	4.412	26.511	102.408	141.304

TABLE 3.3 (Cont)

ESTIMATION OF EMPLOYMENT SERVICE BENEFITS BY STATE - HIGH RANGE
FISCAL YEAR 1974

($ Millions)

	Direct Benefits				Indirect Benefits				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	UI Savings								
	Placement Value	UI Placements	Work Test Denials	Total Direct Benefits	Search Cost Savings	Indirect Placements	Work Test Deterrent Value	Total Indirect	Total Direct & Indirect
NORTH CAROLINA	5.653	.334	1.336	7.323	9.058	.857	6.678	16.593	23.916
NORTH DAKOTA	2.307	.333	.050	2.690	2.839	.208	.252	3.299	5.990
OHIO	7.243	2.901	1.778	11.922	10.054	1.343	8.889	20.286	32.208
OKLAHOMA	4.849	.789	.143	5.781	12.020	.436	.717	13.173	18.955
OREGON	4.797	.935	.371	6.103	6.977	.591	1.855	9.423	15.526
PENNSYLVANIA	14.383	4.568	4.706	23.657	15.078	1.784	23.532	40.394	64.051
SOUTH CAROLINA	4.387	1.241	.506	6.134	3.993	.745	2.530	7.268	13.401
SOUTH DAKOTA	1.147	.314	.002	1.463	3.043	.116	.008	3.167	4.629
TEXAS	20.369	6.556	.779	27.704	29.920	3.199	3.894	37.013	64.717
UTAH	3.841	1.140	.614	5.595	4.154	.552	3.069	7.775	13.370
VERMONT	.811	.480	.106	1.397	.799	.165	.529	1.493	2.890
VIRGINIA	3.769	.685	.533	4.987	5.231	.397	2.665	8.293	13.280
WASHINGTON	7.720	1.009	.273	9.002	10.492	.929	1.365	12.786	21.787
WEST VIRGINIA	2.955	.442	.176	3.573	2.997	.292	.879	4.168	7.741
WISCONSIN	12.752	1.423	1.658	15.833	16.838	1.976	8.291	27.105	42.937
WYOMING	1.083	.176	.005	1.264	2.274	.072	.025	2.371	3.635
Sub-Totals	338.108	70.328	41.279	449.715	432.535	44.798	206.389	683.722	1133.437
Percentage Distribution of Total Benefits...	29.8	6.2	3.6	39.7	38.2	4.0	18.2	60.3	

Missing States: DELAWARE, LOUISIANA, NEVADA, NEW MEXICO, PUERTO RICO, RHODE ISLAND, TENNESSEE, VIRGIN ISLANDS, GUAM

TABLE 3.4

MIDRANGE BENEFIT/COST RATIOS: RANKING OF STATES

STATE	TOTAL BENEFITS ($ MILLIONS)	FY 1974 APPROPRIATIONS ($ MILLIONS)	BENEFIT/COST RATIO
Maryland	17.254	3.894	4.43
Connecticut	16.022	5.047	3.17
Wisconsin	27.303	8.616	3.17
Indiana	17.932	7.980	2.25
Mississippi	10.814	5.002	2.16
Kentucky	9.560	4.445	2.15
New Hampshire	2.967	1.385	2.14
Illinois	42.129	19.722	2.14
District of Columbia	10.042	4.812	2.09
Washington	13.232	6.487	2.04
Iowa	11.056	5.422	2.04
California	83.554	41.160	2.03
Hawaii	4.332	2.172	1.99
Montana	4.162	2.104	1.98
Maine	4.342	2.218	1.96
Michigan	33.185	17.175	1.93
South Carolina	8.968	4.681	1.92
Idaho	5.268	2.797	1.88
Arkansas	9.669	5.177	1.87
Pennsylvania	45.072	24.771	1.82
Utah	9.000	5.013	1.80
North Carolina	15.448	8.649	1.79
Alaska	3.400	1.906	1.78
egon	9.722	5.499	1.77
Missouri	18.491	10.498	1.76
Florida	18.463	11.182	1.65
West Virginia	4.922	2.990	1.65
Arizona	8.565	5.274	1.62
Massachusetts	16.211	10.145	1.60
Nebraska	5.760	3.625	1.59
Wyoming	2.107	1.328	1.59
New York	87.126	55.078	1.58
Texas	40.542	25.627	1.58
Georgia	10.819	7.003	1.54
North Dakota	3.659	2.384	1.53
Kansas	7.481	4.890	1.53
Minnesota	11.634	7.628	1.53
New Jersey	20.542	13.587	1.51
Oklahoma	10.979	7.270	1.51
Alabama	9.064	6.201	1.46
Vermont	2.010	1.383	1.45
Virginia	8.580	5.971	1.44
Ohio	21.916	15.737	1.39
Colorado	7.356	5.829	1.26
South Dakota	2.677	2.384	1.12
Sub-Totals	733.340	402.148	
Omitted States	--	25.045	
tal U.S. FY 1974		427.193	

Average U.S. Sub-Total;
Benefit/Cost Ratio = 1.82

TABLE 3.5

Estimated Rate of Return, Total and by Activity, 45 States

All Individuals Weighted Equally

	Mid Range	High Range	Low Range
Total	1.82	2.82	0.91
Labor Exchange	1.50	2.63	0.57
Enforcement	2.90	3.39	2.11
(Alternative Total	1.11	1.26	0.91)
(Alternative Labor Exchange	0.59	0.62	0.57)

Labor Exchange Output Values Priority Weignted

Total	4.08	6.75	1.78
Labor Exchange	4.43	7.72	1.68

Interpretation of the unweighted results is straightforward. The estimates imply the value of output and transfer savings in total and by activity generated by a dollar's worth of estimated current appropriations. In other words, they may be interpreted as average economic rate of return estimates. For the labor exchange activities, the results are net social output values. For the enforcement activities the results represent savings in claims against social accounts and are thus not "social" returns in a global sense but returns to funders of these accounts. The weighted measures are not rate of return measures in an absolute sense because each dollar of placement value has been multiplied by a priority weight of 1 through 5 according to the priority group of the individual placed. Hence, the ratios are the result of dividing actual dollars of appropriation into weighted dollars of output. Consequently, the weighted numbers should be interpreted as relative average productivity, or an index of average productivity which takes account of target group priorities. To go beyond this interpretation and treat these weighted productivity estimates as absolute productivity numbers would require two additional assumptions. The first assumption is that, in terms of social priorities, a dollar's worth of income generated for a given priority group is worth some multiple of a dollar's worth of income generated on behalf of the average tax payer, where the multiple is the priority weight used by the ES for that target group. The second assumption is that a dollar's worth of output generated by putting people in jobs is worth more (by the respective weighting factor) than a dollar of income generated by saving UI claims.

We observe that the absolute average rate of return for the 45 state total ranges from 0.91 to 2.82 with a mid-range estimate of 1.82. This observation suggests that even using the most conservative assumptions with respect to all the parameters identified in Section 2.0, above, the Employment Service as a whole appears to come close to paying for its current estimate costs. Reference to Appendix H-3 and Tables 3.1 through 3.4 indicates that this conclusion masks variations over states. All states have ratios greater than 1.0 (alternatively, a positive net impact) with the mid-range and high range assumptions. But using the low range (most conservative) assumptions, only 18 out of the 45 states have positive rates of return. On the other hand, we note that the results of the econometrically derived alternative tend to support the most conservative results.

The productivity numbers for the labor exchange and enforcement activities were calculated by dividing the respective value number by an estimate of program costs for the activities. Program cost estimates were made by prorating costs in proportion to UI and non-UI referrals.* In other words, the enforcement value was divided by an amount of total cost proportionate to the percentage of UI referrals for each state.

The results vary by activity. For the enforcement activity, the results imply a high rate of return no matter what the assumptions with respect to the quality parameters. The low range estimate for the aggregate is 2.11 and all but three states have rates of return greater than one for the low range estimates. In fact, even with no deterrent effect, the rate of return is over 1 for all but nine states. For the labor exchange activity, the aggregate estimates range from .57 to 2.63 with a mid-point of 1.50. Using moderate or liberal assumptions with respect to simulation parameter values, labor exchange activities appear to be generating a positive net economic impact. On a state by state basis, the high range parameter assumptions produce labor exchange rates of return greater than 1 for all states, and the mid-range values produce rates of return less than 1 for three states. On the other hand, low range results are greater than 1 for only three states. In other words, it appears that the productivity of enforcement activities greatly exceeds that of labor exchange activities and enforcement appears to be the main reason for the generally positive character of the aggregate results over all assumption sets.

In summary, our empirical analysis leads us to the following conclusions with respect to the net economic impact of the ES:

1. Our uncertainty with respect to the values of critical quality dimensions, represented in our analysis by simulation parameters, generates a wide range of uncertainty with respect to the net economic impact of the ES both as a whole and for individual states.

2. Using either moderate or liberal assumptions concerning the values of critical parameters, the system appears to pay for its estimated costs.

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*Except, as already noted, in the case of Massachusetts, Nebraska, New York, and Washington where the respective proportions of placements were used.

3. On the other hand, the most conservative assumptions dramatically reduce the productivity of the system so that only 18 states have positive net impact; these results incidentally appear to conform most closely with those obtained by employing an econometrically derived earnings differential formula to the data.

4. Using the proportion of UI referrals to total referrals as an estimate of the proportion of resources devoted to enforcement activities, and including savings in transfer payments as part of output value, then the enforcement activities of the ES appear to be highly productive even when the most conservative assumptions are applied, and generally have a higher net impact than the labor exchange activities from the point of view of UI program funders. In fact, even with no deterrent value assumed, the enforcement activities appear to pay for themselves in all but nine of the 45 states.

3.4 Implications for Resource Allocations Across States

Productivity estimates under different assumptions were correlated, both with each other and with the scores generated by the 1976 BPF formula using fiscal year 1974 data. From these correlations we derive implications concerning the sensitivity of relative estimates across states with respect to parameter changes, addition of priority weights, and the relationship between our rankings and those produced by the BPF.

3.4.1 Productivity Estimates as Relative Efficiency Measures

The wide spread in absolute values of productivity estimates which results from the range of uncertainty around the simulation parameter values clearly limit the usefulness of these estimates as absolute rate of return measures. On the other hand, the high correlation among these measures across states, both in an absolute and a rank order sense shown in Table 3.6, indicates that for all of their shortcomings the estimates may be promising as an index of relative efficiency across states. Table 3.6 shows correlations of the high and low estimates with the mid-point estimate. In terms of total factor productivity, correlations of the high absolute measures with the mid-range results are over .9. Correlations of low measures are less. When state ranks, shown in Table 3.7,

TABLE 3.6

CORRELATIONS* OF HIGH AND LOW WITH MID RANGE ESTIMATES, 45 STATES

	High Range	Low Range
	Unweighted Values	
Total	.96	.89
Labor Exchange	.995	.85
Enforcement	.999	.999
	Weighted Values	
Total	.96	.88
Labor Exchange	.994	.84

* Correlations > .30 are significant at the 95% level.

TABLE 3.7

RANKS OF STATES BY TOTAL FACTOR PRODUCTIVITY UNDER MIDRANGE, HIGH RANGE, AND LOW RANGE ASSUMPTIONS

State	Rank	Midrange Est.	Rank	High Range Est.	Rank	Low Range Es
Alabama	40	1.46	38	2.33	34	0.73
Alaska	23	1.78	23	2.74	15	1.06
Arizona	28	1.62	26	2.70	39	0.65
Arkansas	19	1.87	12	3.15	33	0.73
California	12	2.03	14	2.99	7	1.19
Colorado	44	1.26	42	2.14	44	0.44
Connecticut	3	3.17	3	4.25	2	1.99
District of Columbia	9	2.09	6	3.40	13	1.08
Florida	27	1.65	19	2.79	40	0.65
Georgia	34	1.54	33	2.54	35	0.72
Hawaii	13	1.99	18	2.79	4	1.27
Idaho	18	1.88	15	2.88	19	0.99
Illinois	7	2.14	7	3.39	11	1.10
Indiana	4	2.25	5	3.47	5	1.22
Iowa	10	2.04	10	3.32	23	0.89
Kansas	35	1.53	37	2.37	32	0.74
Kentucky	6	2.15	8	3.37	9	1.11
Maine	15	1.96	22	2.75	8	1.16
Maryland	1	4.43	1	5.82	1	2.71
Massachusetts	29	1.60	35	2.52	28	0.80
Michigan	16	1.93	20	2.77	10	1.12
Minnesota	36	1.53	39	2.30	27	0.82
Mississippi	5	2.16	4	3.52	16	1.00
Missouri	25	1.76	25	2.72	20	0.96
Montana	14	1.98	11	3.15	17	1.00
Nebraska	30	1.59	28	2.62	38	0.69
New Hampshire	8	2.14	13	3.06	6	1.21
New Jersey	38	1.51	40	2.29	29	0.79
New York	33	1.58	32	2.57	31	0.64
North Carolina	22	1.79	21	2.77	24	0.85
North Dakota	37	1.53	36	2.51	37	0.70
Ohio	43	1.39	44	2.05	31	0.77
Oklahoma	39	1.51	29	2.61	43	0.51
Oregon	24	1.77	17	2.82	26	0.83
Pennsylvania	20	1.82	30	2.59	14	1.06
South Carolina	17	1.92	16	2.86	12	1.09
South Dakota	45	1.12	45	1.94	45	0.38
Texas	32	1.58	34	2.53	30	0.77
Utah	21	1.80	27	2.67	18	1.00
Vermont	41	1.45	43	2.09	22	0.89
Virginia	42	1.44	41	2.22	36	0.71
Washington	11	2.04	9	3.36	21	0.90
West Virginia	26	1.65	31	2.59	25	0.84
Wisconsin	2	3.17	2	4.98	3	1.53
Wyoming	31	1.59	24	2.74	42	0.56

are compared under each assumption set, the high range ranks show only three states which have moved ten points or more in rank. The low range ranks, however, show eight states changing ten points or more. Sources of change are analyzed below. On the other hand, the range of uncertainty has virtually no significant effect on the correlation of enforcement estimates. We conclude then that the major impact of parameter changes comes through the labor exchange results. Given this sensitivity of ranks to parameter ranges, we conclude that the estimating procedures do not provide a completely robust index of relative economic efficiency. It is likely that evidence which allows us to narrow somewhat the range of uncertainty around these simulation parameter values would yield a very useful index of efficiency.

A shift with respect to the relative productivity scores is introduced by the weighting factor, although the effect does not appear to be significant. The presence of priority weights reduces all correlations but those for enforcement by about .01. This result indicates that the effect of uncertainty in the simulation parameters affecting labor exchange estimates is magnified by the priority weights.

Table 3.8 offers some explanation of how changes in the simualtion parameter values affect the relative efficiency index. The table shows rank correlations of changes in the productivity estimates due to ceteris paribus changes in the values of each simulation parameter with absolute mid-range estimates. For total factor productivity and labor exchange productivity the change due to the 10% increase in duration is very highly correlated with the mid-range estimates. In other words, the effect of positive changes in estimates of placement duration is primarily to increase the spread in scores among states while leaving the ranking of states relatively unchanged. For the search and indirect placement parameters, however, effects on the total factor productivity measures are unrelated to the absolute size of the estimate. In other words, since the changes in total factor productivity estimates generated by changes in these parameters are virtually uncorrelated with the level of the original estimate, uncertainty in these parameters is likely to have more of a shift effect on the ranking of states. The explanation for these results may be that states are quite similar in the mix of placement durations, but much less similar in the number of placements per dollar of cost and value of placements per dollar of cost. The high correlation of enforcement changes with the absolute enforcement is not surprising, since parameter changes for enforcement are simple multiples of the absolute enforcement scores. However, the relatively low correlation between the total factor productivity score and the change created by the 10% increase in the enforcement parameter indicates that states which score well in enforcement are not necessarily those which score well in labor exchange productivity and vice versa.

3.4.2 Implications for Budget Allocations

ES funds are allocated in part on the basis of state scores estimated in the Balanced Placement Formula (BPF) developed by the ICESA. These scores are interpreted as a relative productivity index. In order to test the relationship between the BPF and our methodology, we have correlated our high, mid, and low range scores with the results of applying the FY 1976 BPF to FY 1974 data. Table 3.9 shows the resulting BPF scores.

Table 3.10 shows the correlations of high, low, and mid-range estimates with the BPF scores. Without exception, the correlations between each of the productivity scores and the BPF score are insignificantly different from 0. Also, all signs of correlations are negative. The implication of this result is that the allocations made on the basis of the BPF using fiscal 1974 data are virtually random with respect to our estimates of average productivity across states. The implication is that in spite of variations in rankings of our productivity measures due to uncertainty with respect to the parameter values, any one of the productivity estimates would provide a more economically sound basis for allocation of funds than the BPF.

In summary, analyses of these measures from a relative efficiency point of view are as follows:

1. The sensitivity of rate of return estimate rankings to uncertainty with respect to quality dimensions means the estimates do not provide a robust index of relative economic efficiency.
2. Since changes in the rate of return estimates due to changes in the value of duration parameters are highly correlated with the absolute level of the estimates, variations in this parameter have no significant effect on the rank of the estimates.

TABLE 3.8

RANK CORRELATIONS* OF PARAMETER CHANGE EFFECTS WITH ABSOLUTE MIDRANGE ESTIMATES

	Changes Due to 10% Change in:			
	Duration	Search	Indirect Plcmt.	Deterrence
Total	.73	.07	.06	.48
Labor Exchange	.76	.65	.28	-
Enforcement	-	-	-	.99

* Correlations > .30 are significant at the 95% level.

TABLE 3.9

FY 1976 BPF USING FY 1974 DATA

State	BPF Score*
Alabama	336.380
Alaska	-
Arizona	321.206
Arkansas	318.371
California	2091.340
Colorado	268.591
Connecticut	285.775
District of Columbia	178.224
Florida	594.450
Georgia	360.262
Hawaii	81.523
Idaho	154.466
Illinois	797.912
Indiana	541.981
Iowa	337.805
Kansas	219.627
Kentucky	301.803
Maine	285.775
Maryland	213.935
Massachusetts	446.081
Michigan	691.706
Minnesota	404.992
Mississippi	346.480
Missouri	566.926
Montana	167.964
Nebraska	176.647
New Hampshire	69.959
New Jersey	537.724
New York	2059.112
North Carolina	481.691
North Dakota	126.078
Ohio	745.539
Oklahoma	396.194
Oregon	330.756
Pennsylvania	1085.107
South Carolina	258.600
South Dakota	131.022
Texas	1524.830
Utah	211.932
Vermont	64.149
Virginia	328.468
Washington	405.778
West Virginia	157.989
Wisconsin	369.733
Wyoming	87.822

* Source: USES; Simulations prepared by Westat, Inc.

TABLE 3.10

CORRELATIONS OF ESTIMATES WITH FY 1976 BPF SCORES USING FY 1974 DATA,* 44 STATES

	Mid Range	High Range	Low Range
	Unweighted Values		
Total	-.14	-.17	-.10
Labor Exchange	-.15	-.15	-.13
Enforcement	-.11	-.12	-.10
	Weighted Values		
Total	-.17	-.15	-.13
Labor Exchange	-.11	-.11	-.10

Correlations > .30 are significant at the 95% level.

* Correlations exclude Alaska, for which no 1974 BPF score was available.

3. Changes in the search and indirect placement parameters do alter the rankings of estimates and appear to be the major reasons why the rate of return estimates are not a robust measure of relative efficiency.
4. States which score well in enforcement activities are not the same states which score well in labor exchange activities.

4.0 SENSITIVITY OF PRODUCTIVITY ESTIMATES TO VALUE UNCERTAINTY

4.1 Sensitivity of Absolute Estimates

By altering simulation parameters one at a time, we are able to determine the effects of given changes in these parameters on the absolute level of the productivity estimates and on the rankings. We have analyzed these effects in two ways: First, sensitivity of absolute estimates to a 10% change in the mid-range value of the parameter itself was examined. The result of this exercise gives us some evidence on the relative importance of the parameter in the estimation methodology. Second, we examined the effect of a 10% change in the range of each parameter. This result gives us some idea of the impact on the absolute estimates of the uncertainty related to that parameter. Table 4.1 shows percentage change in the mid-range estimates which result from a 10% change in each of the parameters taken one at a time. These results might be considered the elasticity of the productivity estimates with respect to each parameter. The greatest elasticity is consistently for the search cost savings parameter. The job duration parameter, deterrent parameter, and indirect placement parameter follow in importance.

Multiplying these elasticities by the respective range to mid-point ratios from Table 4.2 gives us an estimate of the elasticity of productivity measures with respect to a change in the parameter equal to 10% of its range. Since the search cost savings parameter is bracketed by the highest relative range of uncertainty, this uncertainty magnifies the previous effect. On the other hand, the range of uncertainty around the deterrence factor parameter, being less than 1, reduces the importance of that factor. Based on these results, it appears that about 55% of the range of productivity estimates is accounted for by the range of uncertainty around the search cost parameter, 25% by uncertainty with respect to the job duration factor, 15% by the deterrence parameter, and 5% by the indirect placement rate parameter. Thus, where these four parameters are

TABLE 4.1

SENSITIVITY OF RATE OF RETURN ESTIMATES TO PARAMETER CHANGES

A. Percent Changes in Midrange Estimates due to 10% Change in Parameter Value

Unweighted Values

	Duration	Search	Indirect Plct.	Deterrence
Total	3.8	3.3	0.5	2.2
Labor Exchange	6.0	4.7	0.7	-
Enforcement	-	-	-	5.9

Weighted Values

	Duration	Search	Indirect Plct.	Deterrence
Total	4.4	3.9	0.2	1.0
Labor Exchange	5.2	4.5	0.2	

b. Percent Changes in Midrange Estimates Due to Parameter Change equal to 10% of Parameter Range

Unweighted Values

	Duration	Search	Indirect Plct.	Deterrence
Total	2.98*	6.6	0.5	1.8
Labor Exchange	4.70	9.4	0.7	-
Enforcement	-	-	-	4.7

Weighted Values

	Duration	Search	Indirect Plct.	Deterrence
Total	3.45	7.8	0.2	0.8
Labor Exchange	4.08	9.0	0.2	-

* Weighted average of short term and long term placements range ÷ midpoint = .784

TABLE 4.2

PARAMETER RANGES

Parameter	Mid	Low	High	Range	R/M
Expected duration in hours of 1 - 3 day placements	16	8	24	16	1.0
Expected duration in hours of 4 - 150 day placements	385	285	565	280	.7
Expected duration in hours of > 150 day placements	385	285	565	280	.7
Search time savings, in hours	22.50	0	45	45	2.0
Indirect placement rate (as % of non-placed referrals)	0.10	0.5	0.15	.1	1.0
Deterrent factor for work tests	3.75	2.0	5	3	0.8

concerned, the greatest returns to reducing uncertainty appear to come from studying the impact of the ES on search costs. In terms of estimates themselves, a simple measure of the relative uncertainty with respect to these estimates is the ratio of range to the mid-range estimate. For total factor productivity, the range is just about equal to the mid-point estimate, while for labor exchange estimates the range is about 1½ times the mid-point estimate. For enforcement, the range is only 30% of the mid-point. This result is consistent with our finding that the major source of uncertainty is the search cost parameter which affects primarily the labor exchange estimates.

4.2 Sensitivity of Relative Efficiency Measures

Table 4.3 shows absolute and rank correlations with mid-range estimates of estimates resulting from changing simulation parameters one at a time by 6% over the mid-range value. All correlations are greater than .99, which implies that while the full range of uncertainty affects ranks in a significant way, a 10% change will not. Estimates of productivity measures across states appear to be relatively insensitive to small changes in quality dimension parameters.

Table 4.4 shows the relative dispersion (standard deviation divided by the mean) of the absolute parameter change effects on rate of return estimates across states. The relatively low numbers for the duration and search cost parameters indicate that the changes caused by these parameters are fairly homogeneous across states. On the other hand, the indirect placement parameter produces slightly more variable changes. Since this parameter operates basically as a multiple of placement values, this finding is consistent with the finding that states tend to vary most in terms of the number of placements and placement value. The highest variability in changes is produced by the deterrence parameter. When this observation is combined with the earlier finding that changes in the deterrence parameter have the least effect on rankings, we conclude that while the deterrence effects are quite variable across states, they are relatively small with respect to the differences between states.

Table 4.5 shows the correlations of changes with each other for the unweighted total factor productivity measure. Note that the labor exchange measures are positively correlated with each other, but the deterrence parameter changes are negatively and/or insignificantly correlated with the labor exchange changes.

This observation reinforces the conclusion above that states that score well in terms of labor exchange activities are not necessarily the same as those which score well in terms of enforcement. Although the placement of UI claimants produces enforcement outputs in the form of claim savings, and this part of the enforcement outputs is a joint product with labor exchange that should be highly correlated with labor exchange production, the deterrence factor itself affects only the enforcement outputs from denial of invalid claims. Hence, we can refine the conclusion somewhat to state that policing activity is the part of the enforcement which is negatively correlated with labor exchange activities. It may be, for example, that the states become more lenient in their denial activities when market conditions make it easy to place individuals. In fact, this hypothesis is part of a general model of the unemployment insurance system set forth by Holen and Horowitz.

In summary, concerning the four quality dimensions analyzed, our conclusions are:

1. Uncertainty about the effect on ES productivity of search time is the source of the widest variations in productivity estimates and produces around 55% of the variation in the productivity estimates. This finding makes ES search time savings a high priority research question.

2. Effects of uncertainty with respect to other parameters are all significantly less and, in our judgment, may be considered secondary to the search question in research importance.

3. Enforcement scores tend to be relatively higher in states where labor exchange scores are lower. This finding suggests that concentrating research on labor exchange measures may have the effect of ignoring a major source of productivity in states with relatively low labor exchange productivity.

TABLE 4.3

ABSOLUTE AND RANK CORRELATIONS OF SENSITIVITY ESTIMATES WITH MIDRANGE ESTIMATES

Weighted Values

	Duration		Search Cost		Indirect Plcmt.		Deterrent	
	Abs.	Rank	Abs.	Rank	Abs.	Rank	Abs.	Rank
Total	.999	.999	.999	.997	.999	.999	.999	.997
Labor Exchange	.999	.999	.999	.998	.999	.999	--	--
Enforcement	--	--	--	--	--	--	.999	.999
Unweighted Values								
Total	.999	.999	.999	.999	.999	.999	.999	.996
Labor Exchange	.999	.999	.999	.999	.999	.999		

TABLE 4.4

RELATIVE DISPERSION OF ABSOLUTE PARAMETERS CHANGE EFFECTS ON RATE OF RETURN ESTIMATES

	Duration	Search	Indirect	Deterrence
Unweighted Values				
Total	.45	.38	.69	1.25
Labor Exchange	.45	.32	.61	-
Enforcement	-	-	-	1.14
Weighted Values				
Total	.36	.39	.45	1.22
Labor Exchange	.37	.33	.42	-

TABLE 4.5

CORRELATIONS* OF PARAMETER CHANGE EFFECTS ON UNWEIGHTED TOTAL FACTOR PRODUCTIVITY ESTIMATES

	Duration	Search	Indirect	Deterrence
Duration	1			
Search	.38	1		
Indirect	.45	.07	1	
Deterrence	-.22	-.44	.14	1

* Correlations > .30 are significant at the 95% level.

APPENDIX H-1

STATE LEVEL DATA USED IN SIMULATION RUNS

State level data are stored in a two card format as described on the following page. Input data elements listed are those described in Appendix F. A listing of the data follows. Note that data for four states are not entered. These are states not included in the FY 1974 ESARS sample file.

```
READY
 LIST TABLE.DATA
 TABLE.DATA
00010 01 ALABAMA       04  350869   57695  6201000  57695     296    48.63
00015 01 03.9 02.9 01.8 03.1 09.9 08.3 03.7 09.0 29.3 13.4 02.0
00020 02 ALASKA        10   51866    8600  1906000  11000      98    66.10
00025 02 10.7 10.5 07.7 10.7 24.3 24.7 20.6 22.8 56.3 10.3 02.0
00030 03
00035 03
00040 04 ARIZONA       09  247693   27720  5274000  58740     265    54.21
00045 04 04.1 04.1 03.1 03.9 09.8 04.1 03.3 03.9 17.9 12.1 02.0
00050 05 ARKANSAS      06  208785   29090  5177000  54906     335    51.39
00055 05 04.1 02.9 01.9 02.8 09.4 10.8 08.3 11.6 19.0 11.5 02.0
00060 06 CALIFORNIA    09 1887471  202150 41160060 319930    5715    61.44
00065 06 07.0 06.5 04.8 06.3 17.6 10.5 09.3 09.5 27.3 10.5 02.0
00070 07
00075 07
00080 08 COLORADO      08  272757   28089  5829000  43398     302    71.02
00085 08 03.4 03.3 02.3 03.1 10.0 05.6 04.8 05.2 12.2 10.3 02.0
00090 09 CONNECTICUT   01  295100   28139  5047000  34681    2164    71.90
00095 09 05.7 05.1 03.7 05.4 12.0 12.8 10.7 11.4 34.8 15.2 02.0
00100 10 DELAWARE      03   43610    5015   972641   4860     166    65.82
00105 10 04.6 04.2 03.1 03.6 30.3 08.3 03.4 08.4 30.5 12.6 02.0
00110 11 DISTRICT COL  03  132435   19083  4812000  27480      46    80.86
00115 11 06.3 03.3 01.5 04.3 11.0 07.5 05.4 05.6 37.5 10.7 02.0
00120 12 FLORIDA       04  507103   67128 11192000 100410     827    51.05
00125 12 04.3 03.6 02.2 04.4 09.8 07.5 03.0 06.0 25.0 09.1 02.0
00130 13 GEORGIA       04  398048   38331  7003000  60382     101    52.73
00135 13 03.9 02.9 01.4 03.6 09.2 07.6 03.0 06.5 29.4 11.1 02.0
00140 14
00145 14
00150 15 HAWAII        09  101143    9191  2172000  12771     528    70.68
00155 15 07.0 07.0 05.4 06.7 16.3 07.1 05.6 06.6 30.7 10.6 02.0
00160 16 IDAHO         10  124505   14751  2797000  28460     551    57.17
00165 16 05.6 05.5 04.1 05.6 12.7 13.0 10.8 12.0 29.6 09.2 02.0
00170 17 ILLINOIS      05  816575  101440 19722000  91795    1882    64.38
00175 17 04.1 03.4 02.2 03.2 10.9 09.6 06.5 08.9 38.5 10.9 02.0
00180 18 INDIANA       05  490469   47912  7980000  84830    1552    49.49
00185 18 04.2 03.8 02.3 03.4 14.0 10.7 05.3 15.7 25.0 10.5 02.0
00190 19 IOWA          07  238956   34486  5422000  68763     491    62.95
00195 19 02.9 02.7 01.8 02.5 11.9 09.7 06.7 07.9 28.1 07.2 02.0
00200 20 KANSAS        07  160203   29798  4890000  33762     641    60.09
00205 20 03.1 02.9 01.9 02.7 13.0 10.5 07.3 08.5 30.6 11.4 02.0
00210 21 KENTUCKY      04  287868   25470  4445000  47586     501    57.94
00215 21 04.4 03.3 02.0 03.5 11.1 09.3 04.2 10.2 33.0 12.9 02.0
00220 22 LOUISIANA     06  318541   35068  5271243  55179     408    54.57
00225 22 06.0 04.2 02.8 04.1 13.8 15.9 08.1 17.1 28.1 09.7 02.0
00230 23 MAINE         01   73808   28139  2218000  15599     984    52.82
00235 23 05.9 05.4 03.9 05.7 12.6 13.4 11.1 11.9 36.3 08.9 02.0
00240 24 MARYLAND      03  270269   18819  3894000  29203    3506    61.55
00245 24 03.5 03.1 01.7 03.6 10.1 05.4 04.5 03.1 20.0 14.3 02.0
00250 25 MASS.         01  433823   45097 10145000   56729     952    66.96
00255 25 06.7 06.6 05.2 05.6 15.9 09.6 07.8 08.3 25.7 10.5 02.0
00260 26 MICHIGAN      05  769495   86437 17175000  77574    4856    62.21
00265 26 05.3 04.8 03.6 04.6 13.8 14.2 09.7 12.6 40.9 11.6 02.0
00270 27 MINNESOTA     05  343800   45240  7628000  59255    1175    64.50
00275 27 04.5 04.4 02.9 05.0 10.2 10.0 08.4 10.0 14.8 09.0 02.0
00290 28 MISSISSIPPI   04  276318   27876  5002000  70972     564    37.67
```

```
00285 28 03.6 02.8 01.7 02.9 09.3 07.8 03.5 08.5 27.5 13.5 02.0
00290 29 MISSOURI      07  439896   57788 10498000  91324     854   55.02
00295 29 04.4 03.7 02.3 04.3 10.5 10.6 07.4 07.3 44.4 12.6 02.0
00300 30 MONTANA       08  109620   11604  2104000  25919      72   51.68
00305 30 06.3 06.2 04.3 05.8 19.6 10.3 08.8 09.6 22.6 09.7 02.0
 310 31 NEBRASKA      07  100770   19856  3625000  29221     145   56.74
   15 31 03.3 03.0 02.0 02.9 13.8 11.1 07.8 09.0 32.4 10.6 02.0
00320 32 NEVADA        09   97806   10535  2277194  14722     377   65.80
00325 32 06.1 06.1 04.7 05.9 14.7 06.2 04.9 05.8 27.0 09.3 02.0
00330 33 NEW HAMP.     01   70634    8219  1385000  11620     306   57.21
00335 33 03.9 03.5 02.5 03.7 08.2 08.7 07.3 07.7 23.8 19.3 02.0
00340 34 NEW JERSEY    02  647223   68930 13587000  59591    2232   70.15
00345 34 05.6 05.2 03.6 05.8 13.5 08.6 05.8 07.4 33.3 08.4 02.0
00350 35 NEW MEXICO    06  177209   18561  2582380  28067     111   50.02
00355 35 05.7 04.0 02.6 03.9 13.1 15.1 07.7 16.2 26.7 13.8 02.0
00360 36 NEW YORK      02 1119325  221420 55078000 172240   10015   61.56
00365 36 05.4 05.2 03.7 05.2 16.7 07.3 06.4 05.4 31.8 08.6 02.0
00370 37 NORTH CAROL.  04  403573   51442  8649000  77149    1847   43.04
00375 37 03.5 02.2 00.9 02.2 10.2 07.3 03.5 07.3 21.7 16.8 02.0
00380 38 NORTH DAKOTA  08   74582   12406  2384000  21754     106   55.95
00385 38 05.1 05.0 03.5 04.7 15.1 08.4 07.1 07.8 18.3 08.5 02.0
00390 39 OHIO          05  735352   89555 15737000  85039    1794   68.34
00395 39 04.3 03.8 02.1 03.7 13.0 09.2 05.9 06.9 38.9 14.5 02.0
00400 40 OKLAHOMA      06  277296   39085  7270000  50356     400   45.37
00405 40 04.2 03.0 01.9 02.9 09.7 11.2 05.7 12.0 19.9 07.9 02.0
00410 41 OREGON        10  272143   28700  5499000  28460     544   54.99
00415 41 05.3 05.2 03.8 05.3 12.0 12.2 10.2 11.3 27.8 12.4 02.0
00420 42 PENNSYLVANIA  03  682209  122000 24771000 130130    4169   71.00
00425 42 04.8 04.4 03.5 03.8 12.7 09.8 09.0 06.7 28.6 13.9 02.0
00430 43 PUERTO RICO   02  280610   25590  3496440  53717     245   36.10
 435 43 12.0 11.4 09.4 10.6 38.2 14.4 13.2 11.0 50.0 04.4 02.0
   40 44 RHODE ISLAND  01   87628   12905  2150008  10879     881   63.67
00445 44 07.1 05.7 04.1 06.0 13.3 14.2 11.8 12.5 38.4 08.6 02.0
00450 45 SOUTH CAROL.  04  233299   27828  4681000  42204     857   50.89
00455 45 03.7 02.8 01.7 03.0 09.4 07.8 03.5 08.5 27.8 11.6 02.0
00460 46 SOUTH DAKOTA  08   73492   10717  2384000  18453       3   50.62
00465 46 03.3 03.2 02.2 03.0 09.8 05.4 04.6 05.0 11.9 10.5 02.0
00470 47 TENNESSEE     04  371185   38708  5306479  58084     708   48.23
00475 47 03.0 02.3 01.4 02.5 07.8 06.5 02.9 07.1 23.0 13.4 02.0
00480 48 TEXAS         06 1032064  152500 25627000 245310    1673   51.15
00485 48 03.9 03.3 01.5 04.0 11.0 08.3 04.3 09.6 30.6 09.1 02.0
00490 49 UTAH          08  148750   18920  5013000  36182     816   61.15
00495 49 05.7 05.6 03.8 05.2 16.7 09.3 07.9 08.6 20.3 12.3 02.0
00500 50 VERMONT       01   59023    6930  1383000  10290     155   61.53
00505 50 05.6 05.0 03.6 05.3 11.8 12.6 10.5 11.2 34.2 11.1 02.0
00510 51 VIRGINIA      03  326892   32712  5971000  68318     753   54.87
00515 51 03.6 03.0 01.6 02.9 11.0 06.1 01.4 06.7 33.3 12.9 02.0
00520 52
00525 52
00530 53 WASHINGTON    10  285745   29507  6487000  72612     430   63.49
00535 53 07.7 07.4 05.2 08.2 15.4 12.1 10.5 11.3 26.2 10.0 02.0
00540 54 WEST VIRG.    03  187997   21211  2990000  27577     243   46.08
00545 54 05.7 05.2 03.8 04.2 20.4 10.2 04.2 10.3 36.4 15.7 02.0
00550 55 WISCONSIN     05  320481   41078  8616000  55997    1639   68.82
00555 55 04.1 03.9 02.4 03.2 12.3 10.6 09.0 10.6 16.8 14.7 02.0
 560 56 WYOMING       08   46833    8086  1328000  14126       8   54.13
   65 56 03.5 03.4 02.4 03.2 10.3 05.7 04.9 05.3 12.5 11.4 02.0
READY
```

Parameter File

Card	Parameter		
1	F_1	Expected duration in hours of 1-3 day placements	
1	F_2	Expected duration in hours of 4-150 day placements	
1	F_3	Expected duration in hours of > 150 day placements	
1	F_4	Search time savings, in hours	
1	F_5	intercept	earnings differential for individuals age 25-44
1	F_6	coefficient of unemp. rate	
1	F_7	intercept	earnings differential for individuals under 25, over 44
2	F_8	coefficient of unemp. rate	
2	F_9	intercept	earnings differential for non-whites
2	F_{10}	coefficient of unemp. rate	
2	F_{11}	intercept	earnings differential for high school graduates
2	F_{12}	coefficient of unemp. rate	
2	F_{13}	Priority weights, veterans	
2	F_{14}	Priority weights, UI, handicapped, female, non-white, poor, older	
3	F_{15}	Priority weights, youth	
3	F_{16}	Priority weights, all others	
3	F_{17}	Priority weights, (not used presently)	
3	F_{18}	deterrent factor for work tests	
3	F_{19}	deterrent factor for placements	
3	F_{20}	Indirect placement rate (as % of non-placed referrals)	
3	F_{21}	Not used	

```
MIDRANGE PARAMETER SETTINGS
     0016      0395      0385      22.50     00000     000000      1190
   000000     00000       000       0370     00000       0005      0003
     0002      0001      0000       3.75      0000       .100        01

HIRANGE PARAMETER SETTINGS
       24      0565      0565      45.00     00000     000000      1190
   000000     00000       000       0370     00000       0005      0003
     0002      0001      0000       5.00      0000       .150        02

LOWRANGE PARAMETER SETTINGS
      .08      0285      0285      00000     00000     000000      1190
   000000     00000       000       0370     00000       0005      0003
     0002      0001      0000       2.00      0000       .050        03

CHANGE PARAMETER SETTINGS 10% INCREMENT IN DURATION OVER MIDRANGE
     17.6     396.5     396.5       22.5     00000     000000      1190
   000000     00000       000       0370     00000       0005      0003
     0002      0001      0000       3.75      0000       .100        04

CHANGE PARAMETER SETTINGS 10% INCREMENT IN SEARCH OVER MIDRANGE
     16.0      0385      0385      24.75     00000     000000      1190
   000000     00000       000       0370     00000       0005      0003
     0002      0001      0000       3.75      0000       .100        05

CHANGE PARAMETER SETTINGS 10% INCREMENT IN I.P.R. OVER MIDRANGE
     16.0      0385      0385      22.50     00000     000000      1190
   000000     00000       000       0370     00000       0005      0003
     0002      0001      0000       3.75      0000       .110        06

CHANGE PARAMETER SETTINGS 10% INCREMENT IN DETERRENCE OVER MIDRANGE
     16.0      0385      0385      22.50     00000     000000      1190
   000000     00000       000       0370     00000       0005      0003
     0002      0001      0000      4.125      0000       .100        07
```

RATE OF RETORN SIMULATION RESULTS

State		Tot Fac prdy		Lab Ex prdy		Enfcmt Prdy	
		Unwtd.	Wtd.	Unwtd.	Wtd.	Direct	Total
MID RANGE PARAMETER SETTINGS							
1	1	1.46	3.63	1.44	4.22	1.01	1.54
2	1	1.78	4.97	1.92	6.06	0.74	1.31
4	1	1.62	4.05	1.53	4.45	1.35	2.08
5	1	1.87	4.80	1.77	5.02	1.35	2.79
6	1	2.03	4.42	1.92	5.82	1.18	2.20
8	1	1.26	3.29	1.14	3.53	1.00	1.95
9	1	3.17	4.63	1.48	4.55	1.36	4.70
11	1	2.09	6.29	2.27	7.04	0.52	0.78
12	1	1.65	4.33	1.59	4.60	1.00	2.15
13	1	1.54	4.20	1.62	4.74	0.92	1.13
15	1	1.99	3.56	1.50	4.24	1.06	2.65
16	1	1.88	4.17	1.48	4.34	1.56	3.51
17	1	2.14	5.75	2.24	7.04	0.79	1.81
18	1	2.25	4.98	2.00	5.49	1.39	3.13
19	1	2.04	4.94	1.95	5.54	1.59	2.40
20	1	1.53	3.06	1.22	3.26	1.10	2.46
21	1	2.15	5.30	1.84	5.47	1.83	4.20
23	1	1.96	3.32	1.12	3.21	1.27	3.52
24	1	4.43	5.44	0.76	2.22	3.04	12.77
25	1	1.60	3.65	1.40	3.90	1.12	2.52
26	1	1.93	3.55	1.13	3.37	1.27	4.03
27	1	1.53	3.13	1.18	3.31	1.22	2.57
28	1	2.16	5.60	1.99	5.85	1.57	3.54
29	1	1.76	4.27	1.72	5.09	1.04	1.87
30	1	1.98	4.82	2.13	5.86	1.21	1.48
31	1	1.59	4.16	1.60	4.74	1.05	1.54
33	1	2.14	3.62	1.22	3.50	1.24	3.85
34	1	1.51	3.26	1.40	4.18	0.72	1.70
36	1	1.58	3.71	1.31	3.95	0.58	2.72
37	1	1.79	3.63	1.09	3.07	2.86	11.44
38	1	1.53	3.90	1.52	4.31	1.07	1.59
39	1	1.39	2.63	0.95	2.70	1.01	2.45
40	1	1.51	4.07	1.59	4.71	0.72	1.13
41	1	1.77	4.03	1.56	4.32	1.31	2.71
42	1	1.82	3.18	0.97	2.79	1.51	4.38
45	1	1.92	4.10	1.68	4.90	1.16	2.42
46	1	1.12	3.49	1.17	3.99	0.84	0.85
48	1	1.58	3.90	1.63	4.82	1.04	1.46
49	1	1.80	3.74	1.39	4.14	1.20	2.78
50	1	1.45	2.67	1.30	3.42	0.99	1.66
51	1	1.44	3.14	1.05	3.05	1.39	3.67
53	1	2.04	4.81	1.89	5.00	1.81	3.26
54	1	1.65	3.86	1.49	4.20	1.14	2.36
55	1	3.17	6.90	2.56	7.14	1.93	5.83
56	1	1.59	4.25	1.61	4.59	1.25	1.38

RATE OF RETURN SIMULATION RESULTS

State		Tot Fac prdy		Lab Ex prdy		Enfcmt Prdy	
		Unwtd.	Wtd.	Unwtd.	Wtd.	Direct	Total
HIGH RANGE PARAMETER SETTINGS							
1	3	2.33	6.07	2.50	7.32	1.01	1.71
2	3	2.74	7.88	3.11	9.77	0.74	1.50
4	3	2.70	7.10	2.77	8.08	1.35	2.32
5	3	3.15	8.36	3.14	8.93	1.35	3.27
6	3	2.99	7.05	3.28	9.90	1.18	2.54
8	3	2.14	5.93	2.12	6.58	1.00	2.26
9	3	4.25	6.72	2.53	7.73	1.36	5.81
11	3	3.40	10.40	3.75	11.71	0.52	0.86
12	3	2.79	7.55	2.83	8.19	1.00	2.53
13	3	2.54	7.09	2.78	8.13	0.92	1.20
15	3	2.79	5.36	2.50	6.99	1.06	3.18
16	3	2.88	6.83	2.56	7.49	1.56	4.17
17	3	3.39	9.55	3.80	11.97	0.79	2.15
18	3	3.47	8.10	3.40	9.32	1.39	3.71
19	3	3.32	8.53	3.48	9.91	1.59	2.67
20	3	2.37	5.08	2.19	5.80	1.10	2.91
21	3	3.37	8.73	3.12	9.30	1.83	5.00
23	3	2.75	5.08	1.94	5.51	1.27	4.27
24	3	5.82	7.58	1.34	3.88	3.04	16.01
25	3	2.52	6.09	2.42	6.75	1.12	2.99
26	3	2.77	5.53	1.93	5.75	1.27	4.94
27	3	2.30	5.08	2.06	5.76	1.22	3.02
28	3	3.52	9.42	3.43	10.06	1.57	4.20
29	3	2.72	6.94	2.92	8.60	1.04	2.14
30	3	3.15	7.94	3.64	9.91	1.21	1.57
31	3	2.62	7.22	2.83	8.62	1.05	1.71
33	3	3.06	5.66	2.16	6.16	1.24	4.72
34	3	2.29	5.35	2.45	7.30	0.72	2.03
36	3	2.57	6.47	2.38	7.23	0.58	3.33
37	3	2.77	6.02	1.93	5.42	2.86	14.30
38	3	2.51	6.63	2.65	7.49	1.07	1.77
39	3	2.05	4.21	1.68	4.74	1.01	2.93
40	3	2.61	7.28	2.90	8.60	0.72	1.27
41	3	2.82	6.79	2.74	7.59	1.31	3.18
42	3	2.59	4.92	1.68	4.78	1.51	5.33
45	3	2.86	6.59	2.88	8.38	1.16	2.84
46	3	1.94	6.33	2.15	7.36	0.84	0.86
48	3	2.53	6.62	2.87	8.51	1.04	1.60
49	3	2.67	6.06	2.41	7.20	1.20	3.30
50	3	2.09	4.16	2.25	5.86	0.99	1.88
51	3	2.22	5.20	1.84	5.34	1.39	4.42
53	3	3.36	8.21	3.31	8.76	1.51	3.74
54	3	2.59	6.39	2.55	7.19	1.14	2.77
55	3	4.98	11.49	4.50	12.49	1.93	7.12
56	3	2.74	7.52	2.90	8.26	1.25	1.43

RATE OF RETURN SIMULATION RESULTS

State		Tot Fac prdy		Lab Ex prdy		Enfcmt Prdy	
		Unwtd.	Wtd.	Unwtd.	Wtd.	Direct	Total
LOW RANGE PARAMETER SETTINGS							
1	2	0.73	1.60	0.57	1.68	1.01	1.29
2	2	1.06	2.87	1.07	3.42	0.74	1.04
4	2	0.65	1.32	0.43	1.23	1.35	1.74
5	2	0.73	1.68	0.58	1.63	1.35	2.12
6	2	1.19	2.28	0.85	2.63	1.18	1.72
8	2	0.44	0.84	0.25	0.72	1.00	1.50
9	2	1.99	2.70	0.72	2.21	1.36	3.14
11	2	1.08	3.13	1.14	3.47	0.52	0.66
12	2	0.65	1.56	0.53	1.55	1.00	1.61
13	2	0.72	1.84	0.67	1.98	0.92	1.03
15	2	1.27	2.14	0.79	2.31	1.06	1.91
16	2	0.99	1.90	0.59	1.73	1.56	2.60
17	2	1.10	2.69	1.02	3.14	0.79	1.33
18	2	1.22	2.47	0.91	2.52	1.39	2.32
19	2	0.89	1.76	0.63	1.70	1.59	2.02
20	2	0.74	1.26	0.38	1.08	1.10	1.83
21	2	1.11	2.49	0.80	2.40	1.83	3.09
23	2	1.16	1.75	0.47	1.36	1.27	2.47
24	2	2.71	3.09	0.28	0.83	3.04	8.23
25	2	0.80	1.61	0.57	1.56	1.12	1.87
26	2	1.12	1.85	0.50	1.51	1.27	2.74
27	2	0.82	1.46	0.45	1.30	1.22	1.94
28	2	1.00	2.40	0.80	2.38	1.57	2.62
29	2	0.96	2.12	0.78	2.35	1.04	1.48
30	2	1.00	2.26	0.89	2.54	1.21	1.36
31	2	0.69	1.49	0.55	1.53	1.05	1.31
33	2	1.21	1.79	0.44	1.33	1.24	2.64
34	2	0.79	1.47	0.53	1.60	0.72	1.25
36	2	0.64	1.17	0.35	1.01	0.88	1.86
37	2	0.85	1.51	0.37	1.08	2.86	7.43
38	2	0.70	1.59	0.59	1.63	1.07	1.35
39	2	0.77	1.24	0.35	1.01	1.01	1.78
40	2	0.51	1.15	0.42	1.20	0.72	0.94
41	2	0.83	1.65	0.56	1.55	1.31	2.06
42	2	1.06	1.65	0.41	1.19	1.51	3.04
45	2	1.09	2.07	0.74	2.18	1.16	1.83
46	2	0.38	0.89	0.30	0.89	0.84	0.85
48	2	0.77	1.59	0.58	1.71	1.04	1.27
49	2	1.00	1.74	0.57	1.62	1.20	2.04
50	2	0.89	1.46	0.55	1.54	0.99	1.34
51	2	0.71	1.35	0.39	1.13	1.39	2.60
53	2	0.90	1.91	0.70	1.83	1.81	2.59
54	2	0.84	1.78	0.63	1.78	1.14	1.79
55	2	1.53	2.97	0.96	2.73	1.93	4.01
56	2	0.56	1.33	0.47	1.33	1.25	1.32

RATE OF RETURN SIMULATION RESULTS

		Tot Fac prdy		Lab Ex prdy		Enfcmt Prdy	
State		Unwtd.	Wtd.	Unwtd.	Wtd.	Direct	Total
CHANGE PARAMETER SETTINGS - 10% INCREMENT IN DURATION OVER MIDRANGE							
1	4	1.52	3.81	1.52	4.46	1.01	1.54
2	4	1.90	5.34	2.07	6.54	0.74	1.31
4	4	1.67	4.19	1.59	4.63	1.35	2.08
5	4	1.94	5.01	1.85	5.25	1.35	2.79
6	4	2.10	4.65	2.04	6.20	1.18	2.20
8	4	1.29	3.38	1.18	3.63	1.00	1.95
9	4	3.22	4.78	1.59	4.87	1.36	4.70
11	4	2.23	6.71	2.43	7.53	0.52	0.78
12	4	1.72	4.52	1.66	4.82	1.00	2.15
13	4	1.62	4.43	1.71	5.02	0.92	1.13
15	4	2.06	3.75	1.62	4.57	1.06	2.65
16	4	1.95	4.37	1.56	4.58	1.56	3.51
17	4	2.24	6.09	2.39	7.48	0.79	1.81
18	4	2.35	5.26	2.13	5.85	1.39	3.13
19	4	2.11	5.14	2.04	5.78	1.59	2.40
20	4	1.57	3.18	1.28	3.41	1.10	2.46
21	4	2.25	5.59	1.95	5.80	1.83	4.20
23	4	2.00	3.44	1.19	3.40	1.27	3.52
24	4	4.46	5.52	0.80	2.33	3.04	12.77
25	4	1.66	3.83	1.48	4.12	0.0	2.52
26	4	1.98	3.71	1.20	3.58	1.27	4.03
27	4	1.57	3.27	1.24	3.50	1.22	2.57
28	4	2.26	5.89	2.10	6.18	1.57	3.54
29	4	1.84	4.51	1.83	5.42	1.04	1.87
30	4	2.07	5.09	2.25	6.21	1.21	1.48
3:	4	1.65	4.33	1.68	4.95	0.0	1.54
33	4	2.18	3.75	1.28	3.69	1.24	3.85
34	4	1.56	3.41	1.48	4.41	0.72	1.70
36	4	1.62	3.83	1.35	4.10	0.0	2.72
37	4	1.84	3.78	1.14	3.22	2.86	11.44
38	4	1.60	4.09	1.61	4.53	1.07	1.59
39	4	1.43	2.73	1.00	2.84	1.01	2.45
40	4	1.56	4.21	1.65	4.88	0.72	1.13
41	4	1.83	4.21	1.64	4.53	1.31	2.71
42	4	1.86	3.31	1.03	2.96	1.51	4.38
45	4	1.99	4.31	1.78	5.21	1.16	2.42
46	4	1.16	3.60	1.22	4.11	0.84	0.85
48	4	1.64	4.08	1.71	5.06	1.04	1.46
49	4	1.85	3.90	1.47	4.37	1.20	2.78
50	4	1.50	2.79	1.38	3.65	0.99	1.66
51	4	1.48	3.28	1.11	3.21	1.39	3.67
53	4	2.16	5.04	1.99	5.26	0.0	3.26
54	4	1.72	4.07	1.58	4.44	1.14	2.36
55	4	3.28	7.21	2.70	7.53	1.93	5.83
56	4	1.64	4.41	1.68	4.78	1.25	1.38

RATE OF RETURN SIMULATION RESULTS

State		Tot Fac prdy		Lab Ex prdy		Enfcmt	Prdy
		Unwtd.	Wtd.	Unwtd.	Wtd.	Direct	Total
CHANGE PARAMETER SETTINGS - 10% INCREMENT IN SEARCH OVER MIDRANGE							
1	5	1.51	3.77	1.50	4.41	1.01	1.54
2	5	1.82	5.07	1.97	6.19	0.74	1.31
4	5	1.70	4.27	1.62	4.72	1.35	2.08
5	5	1.95	5.05	1.86	5.30	1.35	2.79
6	5	2.07	4.55	1.99	6.03	1.18	2.20
8	5	1.33	3.50	1.22	3.78	1.00	1.95
9	5	3.20	4.69	1.53	4.68	1.36	4.70
11	5	2.15	6.48	2.34	7.27	0.52	0.78
12	5	1.73	4.54	1.67	4.84	1.00	2.15
13	5	1.60	4.37	1.69	4.94	0.92	1.13
15	5	2.02	3.61	1.54	4.33	1.06	2.65
16	5	1.94	4.33	1.55	4.53	1.56	3.51
17	5	2.20	5.95	2.32	7.30	0.79	1.81
18	5	2.30	5.13	2.07	5.69	1.39	3.13
19	5	2.13	5.20	2.06	5.86	1.59	2.40
20	5	1.58	3.19	1.29	3.43	1.10	2.46
21	5	2.21	5.49	1.91	5.69	1.83	4.20
23	5	1.99	3.40	1.17	3.34	1.27	3.52
24	5	4.46	5.51	0.80	2.32	3.04	12.77
25	5	1.67	3.79	1.46	4.07	0.0	2.52
26	5	1.96	3.64	1.17	3.49	1.27	4.03
27	5	1.57	3.24	1.23	3.46	1.22	2.57
28	5	2.24	5.83	2.08	6.10	1.57	3.54
29	5	1.81	4.40	1.79	5.27	1.04	1.87
30	5	2.05	5.00	2.22	6.10	1.21	1.48
31	5	1.65	4.37	1.68	5.00	0.0	1.54
33	5	2.18	3.73	1.28	3.66	1.24	3.85
34	5	1.55	3.38	1.46	4.37	0.72	1.70
36	5	1.65	3.91	1.39	4.20	0.0	2.72
37	5	1.84	3.78	1.14	3.22	2.86	11.44
38	5	1.59	4.07	1.59	4.51	1.07	1.59
39	5	1.42	2.71	1.00	2.82	1.01	2.45
40	5	1.59	4.32	1.69	5.02	0.72	1.13
41	5	1.83	4.20	1.64	4.53	1.31	2.71
42	5	1.85	3.27	1.02	2.90	1.51	4.38
45	5	1.96	4.22	1.74	5.08	1.16	2.42
46	5	1.19	3.72	1.25	4.26	0.84	0.95
48	5	1.64	4.07	1.71	5.06	1.04	1.46
49	5	1.84	3.87	1.45	4.32	1.20	2.78
50	5	1.48	2.74	1.35	3.55	0.99	1.66
51	5	1.48	3.27	1.10	3.20	1.39	3.67
53	5	2.12	5.02	1.98	5.24	0.0	3.26
54	5	1.70	4.01	1.55	4.37	1.14	2.36
55	5	3.27	7.16	2.68	7.47	1.93	5.83
56	5	1.67	4.49	1.71	4.87	1.25	1.38

RATE OF RETURN SIMULATION RESULTS

State		Tot Fac prdy Unwtd.	Wtd.	Lab Ex prdy Unwtd.	Wtd.	Enfcmt Prdy Direct	Total
CHANGE PARAMETER SETTINGS - 10% INCREMENT IN I.P.R OVER MIDRANGE							
1	6	1.47	3.64	1.45	4.24	1.01	1.54
2	6	1.79	4.99	1.93	6.09	0.74	1.31
4	6	1.63	4.06	1.54	4.46	1.35	2.08
5	6	1.87	4.81	1.77	5.03	1.35	2.79
6	6	2.04	4.44	1.93	5.86	1.18	2.20
8	6	1.26	3.30	1.14	3.54	1.00	1.95
9	6	3.18	4.65	1.50	4.60	1.36	4.70
11	6	2.09	6.31	2.28	7.07	0.52	0.78
12	6	1.66	4.34	1.60	4.62	1.00	2.15
13	6	1.55	4.21	1.62	4.76	0.92	1.13
15	6	2.00	3.58	1.52	4.28	1.06	2.65
16	6	1.89	4.18	1.48	4.35	1.56	3.51
17	6	2.14	5.78	2.25	7.07	0.79	1.81
18	6	2.26	5.01	2.01	5.53	1.39	3.13
19	6	2.04	4.95	1.96	5.55	1.59	2.40
20	6	1.53	3.07	1.23	3.27	1.10	2.46
21	6	2.16	5.32	1.84	5.49	1.83	4.20
23	6	1.96	3.33	1.13	3.22	1.27	3.52
24	6	4.43	5.45	0.77	2.23	3.04	12.77
25	6	1.60	3.67	1.41	3.91	0.0	2.52
26	6	1.94	3.57	1.13	3.39	1.27	4.03
27	6	1.53	3.14	1.18	3.33	1.22	2.57
28	6	2.17	5.61	2.00	5.86	1.57	3.54
29	6	1.77	4.28	1.73	5.11	1.04	1.87
30	6	1.98	4.83	2.13	5.87	1.21	1.48
31	6	1.59	4.17	1.60	4.75	0.0	1.54
33	6	2.15	3.64	1.23	3.52	1.24	3.85
34	6	1.52	3.28	1.41	4.20	0.72	1.70
36	6	1.58	3.72	1.31	3.96	0.0	2.72
37	6	1.79	3.65	1.09	3.08	2.86	11.44
38	6	1.54	3.91	1.53	4.32	1.07	1.59
39	6	1.40	2.64	0.96	2.71	1.01	2.45
40	6	1.51	4.08	1.60	4.72	0.72	1.13
41	6	1.77	4.04	1.57	4.33	1.31	2.71
42	6	1.82	3.19	0.98	2.80	1.51	4.38
45	6	1.92	4.12	1.69	4.93	1.16	2.42
46	6	1.13	3.50	1.18	4.00	0.84	0.85
48	6	1.59	3.92	1.64	4.84	1.04	1.46
49	6	1.80	3.76	1.40	4.16	1.20	2.78
50	6	1.46	2.68	1.31	3.45	0.99	1.66
51	6	1.44	3.15	1.06	3.06	1.39	3.67
53	6	[illegible]	4.83	1.90	5.02	0.0	3.26
54	6	1.65	3.83	1.49	4.21	1.14	2.36
55	6	3.18	6.93	2.58	7.18	1.93	5.83
56	6	1.59	4.25	1.61	4.60	1.25	1.38

RATE OF RETURN SIMULATION RESULTS

CHANGE PARAMETER SETTINGS - 10% INCREMENT IN DETERRENCE OVER MIDRANGE

State		Tot Fac prdy		Lab Ex prdy		Enfcmt Prdy	
		Unwtd.	Wtd.	Unwtd.	Wtd.	Direct	Total
1	7	1.47	3.64	1.44	4.22	1.01	1.59
2	7	1.80	4.99	1.92	6.06	0.74	1.37
4	7	1.64	4.06	1.53	4.45	1.35	2.15
5	7	1.88	4.81	1.77	5.02	1.35	2.94
6	7	2.07	4.46	1.92	5.82	1.18	2.30
8	7	1.28	3.31	1.14	3.53	1.00	2.04
9	7	3.35	4.80	1.48	4.55	1.36	5.03
11	7	2.09	6.29	2.27	7.04	0.52	0.80
12	7	1.66	4.34	1.59	4.60	1.00	2.26
13	7	1.55	4.20	1.62	4.74	0.92	1.15
15	7	2.06	3.63	1.50	4.24	1.06	2.81
16	7	1.92	4.21	1.48	4.34	1.56	3.71
17	7	2.16	5.78	2.24	7.04	0.79	1.91
18	7	2.28	5.02	2.00	5.49	1.39	3.31
19	7	2.05	4.96	1.95	5.54	1.59	2.48
20	7	1.56	3.09	1.22	3.26	1.10	2.59
21	7	2.18	5.33	1.84	5.47	1.83	4.44
23	7	2.04	3.39	1.12	3.21	1.27	3.75
24	7	4.73	5.74	0.76	2.22	3.04	13.74
25	7	1.62	3.68	1.40	3.90	0.0	2.66
26	7	2.01	3.63	1.13	3.37	1.27	4.30
27	7	1.56	3.16	1.18	3.31	1.22	2.71
28	7	2.18	5.62	1.99	5.85	1.57	3.74
29	7	1.78	4.29	1.72	5.09	1.04	1.95
30	7	1.98	4.83	2.13	5.86	1.21	1.51
31	7	1.60	4.17	1.60	4.74	0.0	1.59
33	7	2.23	3.72	1.22	3.50	1.24	4.11
34	7	1.55	3.30	1.40	4.18	0.72	1.80
36	7	1.62	3.75	1.31	4.66	0.0	2.90
37	7	1.84	3.69	1.09	3.07	2.86	12.29
38	7	1.54	3.90	1.52	4.31	1.07	1.64
39	7	1.44	2.67	0.95	2.70	1.01	2.60
40	7	1.52	4.08	1.59	4.71	0.72	1.17
41	7	1.79	4.05	1.56	4.32	1.31	2.85
42	7	1.89	3.25	0.97	2.79	1.51	4.66
45	7	1.96	4.14	1.68	4.90	1.16	2.54
46	7	1.12	3.49	1.17	3.99	0.84	0.86
48	7	1.59	3.91	1.63	4.82	1.04	1.50
49	7	1.84	3.79	1.39	4.14	1.20	2.94
50	7	1.48	2.70	1.30	3.42	0.99	1.72
51	7	1.47	3.17	1.05	3.05	1.39	3.89
53	7	2.06	4.82	1.89	5.00	0.0	3.41
54	7	1.67	3.89	1.49	4.20	1.14	2.48
55	7	3.24	6.97	2.56	7.14	1.93	6.21
56	7	1.59	4.25	1.61	4.59	1.25	1.40

APPENDIX I

SOCIAL VALUE WEIGHTS FOR ES ACTIVITIES: METHODOLOGY, INCENTIVES, EQUITY AND POLICY CONSIDERATIONS

1.0 INTRODUCTION

There remains one crucial aspect of the present ES productivity study which has not yet been systematically explored. This area, although alluded to numerous times in other working papers, is the problem of establishing appropriate "social value" weights for aggregating the diverse output values of the Employment Service. An appropriate perspective requires a consideration of weighting outputs within the two major areas of ES activities (i.e., labor exchange and enforcement) as well as between the output types.

The basic conceptual model has been cogently set forth in the following exposition by Professor Steiner: "Society is necessarily made up of individuals, but it need be no simple aggregate of them." In his 1969 testimony before the Subcommittee on Economy in Government,* Professor Steiner described a rationale for collective actions based on the view that individuals voluntarily yield certain powers to a government which is "somehow charged to discover, articulate and implement social priorities, or collective wants." Society can then be thought of as an independent entity possessing its own value orderings, not necessarily an aggregation across individual utility, but rather "across individual political influence and tolerance."

Thus, it is possible to conceptually express the public interest (or "social welfare") as a function of several arguments,

$$U = U\,(Z_1,\ Z_2,\ Z_3,\ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots Z_n)$$

"where the Z's are different aspects of the public interest such as economic efficiency (or contribution to national income), the pattern of income distribution, the rate of economic growth, balance of payments equilibrium ....." (etc.). To the extent that the arguments are measurable only along different dimensions, there is an implicit weighting or tradeoff problem among conflicting objectives (i.e., aZ_i vs. bZ_j). Professor Steiner viewed the choice of the weights themselves (the values of a and b) as an important dimension of the public interest.

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*Steiner, Peter O., "The Public Sector and the Public Interest", The Analysis and Evaluation of Public Expenditures: The PPB System, A Compedium of Papers submitted to the Subcommittee on Economy in Government of the Joint Economic Committee, 91st Congress of the United States, Vol. I, Washington, D. C. 1969, pp. 13-45.

It is with this recognition of an underlying "social welfare function" that a fruitful view of appropriately weighting the outputs the U. S. Employment Service should be sought. This is particularly relevant for consideration of efficiency effects vis-a-vis income distributional aspects. While it is most likely not an appropriate research goal to attempt to specify the "socially optimal" weights for the Z's, competent analysis should keep them in conceptual perspective and perhaps point out the implications of nominally "unweighted outcome measures.

Basil Moore, in his 1966 analysis of the USES for the Bureau of the Budget, posed a number of conceptual and empirical issues in terms consistent with such an evaluation perspective.* Briefly, his considerations provided the following views:

1. The economic role of the ES is to improve the efficiency of the labor market. Although there are private sector counterparts (employment agencies), less than perfectly competitive labor markets would not produce an economically efficient allocation of resources. The private market "failure" was cast in terms of potential externalities (a condition when private costs or benefits diverge substantially from social costs or benefits). The nature of labor market information as a "public good" was also put forth as a reason for the existence of the ES.

2. Redistribution of income (cf., the priority weights of the Balanced Placement Formula, discussed below) to particular classes and regions, and the promotion of particular social values (especially private responsibility and individual self-sufficiency) were also noted as distinct and important objectives of government policy.

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* "A Benefit-Cost Analysis of the United States Employment Service", November 1966, pp. 1-16.

3. Economic efficiency alone did not seem to justify the public "displacement" of the private sector provision of placement services, but the redistribution of income in a particular form (i.e., through the discipline of working) was perceived to be a matter not of indifference to society. Moore postulated that a "weighted sum" of economic efficiency and income redistribution goals be considered as a measure of the tradeoff, given that the relative values could be agreed upon between the Congress and the Executive.

4. There should be judicious caution in comparing a given individual's experience with and without USES placement assistance. This is not "equivalent conceptually to comparing the experiences of different individuals, some of whom are USES applicants and some who are not. The two groups are likely to differ in important aspects since there is a self-selection process in the sub-set of the total universe of the unemployed who apply to USES. Those who apply and are placed may be more or less able than the rest of the unemployed, with whom their unemployment and income records are compared."

The principal focus underlying the formulation of "social value" weights for ES outputs, then, can be reduced to essentially two major dimensions: efficiency and equity (income redistribution) considerations. Note that efficiency here refers to the program's effects on and in the rest of the economy, as opposed to the "efficiency" of the program's internal management. This latter aspect is indeed a relevant one, but should be addressed in the context that "social value weights" provide effective incentives for management at the state and local office levels.

2.0 THE BALANCED PLACEMENT FORMULA

The recognition of income redistribution goals is underscored in the present ES system by the Balanced Placement Formula (BPF) mechanism. The BPF is used for relative evaluation and for allocating ES Title III funds among state agencies. That is, the BPF doubles as a budget planning tool and an ex-post reward system for past performance of the state agencies with regard to total placements and placements of applicants from policy-determined preferential groups (i.e., veterans, minorities, migrants, etc.). However, as will become evident, since the BPF focuses entirely on the labor exchange dimensions of the system, it ignores social values generated by outputs of the enforcement activities of the ES.

Table 1 illustrates the structure of the BPF quantitative and qualitative weighting factors (FY 1976 version) for the respective elements of ES placement activity evaluation.

It appears that in its present form the Balanced Placement Formula may produce counterproductive incentives for state managers, and inefficient funding patterns across states. Further, the BPF ignores some of the most socially productive ES activities and permits no meaningful evaluation of the system on a value generated per dollar of cost basis.

There are several major problems with the BPF mechanism as it is presently structured. First, as indicated, it focuses entirely on the labor exchange dimensions of the system and ignores social values generated by outputs of enforcement activities of the ES. This feature of the Balanced Placement Formula means that there is no incentive for operational level managers to consider the enforcement activities as worthwhile. In fact, one finding of the Shelly study is that the Balanced Placement Formula performance is negatively correlated with enforcement (work test performance). This type of incentive leads to perfunctory performance of these activities and low enforcement productivity. (Our empirical findings have shown that some of the

TABLE 1

INITIAL BUDGET WEIGHTS

(Source: BPF for FY1976)

QUANTITATIVE FACTORS			60%
A. Productivity (Placement Performance per Manyear Worked)		30%	
1. Number of Individuals Placed per Manyear Worked		20%	
2. Number of Placement Transactions per Manyear		10%	
B. Effectiveness in Placing Applicants		15%	
1. Applicants as Percent of Unemployed		7%	
2. Individuals Placed as Percent of Applicants		8%	
C. Effectiveness in Filling Jobs		15%	
1. Non-Agricultural Jobs		11%	
a. Penetration of Employment Market	5%		
b. Effectiveness in Filling Job Openings	6%		
2. Agricultural Seasonal Jobs		4%	
QUALITATIVE FACTORS			40%
A. Types of Individuals Placed		25%	
1. Success in Placing Special Target Groups: veterans, minorities, poor, UI, claimants, migrants, women, handicapped, youth, older workers		20%	
2. Success in Placing Counseled Applicants		5%	
a. Counselees as Proportion of Applicants	2%		
b. Counselees Placed as Proportion of Counselees	3%		
B. Types of Jobs Filled		15%	
1. Duration		5%	
2. Wages		5%	
3. Occupational Level		5%	

enforcement outputs of the ES system may be "doubly" productive when compared with labor exchange activities in the sense that placement of a UI, welfare or food stamp claimant produces both the ordinary placement value plus additional savings in claims against social transfer accounts.) The work test activity which results in claim denials also produces savings to the extent that invalid claims are deterred. Our findings suggest that using factors which are likely to over-estimate the time costs of enforcement, the rate of return for these activities is very high; higher, in fact, than for labor exchange activities. Hence, the present BPF mechanism produces both a misleading evaluation of productivity across states and for the system as a whole and discourages managers of the system from pursuing one of the more socially valuable activities.

Another major problem is related to the structure of the BPF itself. States are evaluated separately (in the Quantitative Factors portion) in terms of the number of placements made, without simultaneous regard to the quality dimensions of the placements. Although a separate evaluation is conducted for placement quality, quality dimensions are not used as factors in evaluating placements for target groups. This particular aspect of the BPF structure treats all placements, without regard to duration, wage or other dimensions of value added, as being equal in value. Thus, even for labor exchange activities alone, the BPF is questionable as an appropriate evaluation device. It thus tends to produce misleading operational incentives, since it encourages maximization of placements which are least cost in an absolute sense instead of those which produce the greatest social value (income identified to target groups) per dollar of investment. Wages in about two-thirds of all placements in both 1974 and 1975, for example, were under $2.50 per hour. And while most placements are expected to last more than four days, there are no follow-up procedures to verify actual durations. To the contrary, the evidence is that of the placements expected to last 150 days or more, less than 35% actually do. (See Kuptzin, "Estimate of Dollar Value of ES Placements in FY 1974 .....")

There has been some attempt to control for placement quality by distinguishing between agricultural and non-agricultural placements, possibly on the grounds that low wage, short duration placements tend to be concentrated in agricultural areas. However, our site visits suggest that this distinction may also be potentially pernicious, since the growth of the farm labor contract industry has almost eliminated mass placements by the ES in most areas, while the sophistication of modern agri-business has led to requirements for larger numbers of skilled workers and operatives in farm work.

There are still other problems with the BPF as a productivity measure. The Shelley Report points out that there is an "effective weighting" problem which depends on the variability of the individual criteria included in the index; the same source mentions the problem of double counting (Shelley, 1975, Volume 2). In our view, the double counting problem is symptomatic of problems in the derivation of the BPF. As far as we can tell, the BPF was derived in the absence of a clear conceptual model of the social value of benefits associated with the labor exchange function of the ES.

A further major limitation is that while the mechanism produces an index of relative efficiency, it does not permit evaluation of overall investments in even the labor exchange activities of ES as opposed to other social alternatives. Finally, as will be shown below, the attempt to accommodate numerous "priority groups" has the effect of nullifying almost any priority incentive for most groups except veterans.

3.0 RESPONSE TO BPF INCENTIVES

Given the structure of the BPF mechanism and performance evaluation factors described above, one question that can still be posed is how effective are the (implicit) incentives? Even in light of the problems inherent in the BPF, do local ES office managers, in fact, respond to them? Some partial evidence can be deduced from Table 2.

The various "pure placement" weights for priority groups correspond to the following:

BPF Category	Target Group	BPF Weight Per Placement
(a)	Veterans	5
(b-h)	Minority,Disadvantaged	3
(i)	Youth	2
-	Other	1

An inspection of the statistics compiled in Table 2 leads to the following conclusions:

1. Referral transaction percentages in FY 1974 (that is, the number of referrals ÷ the number receiving service)averaged around 20 percent for all four major groups shown. Veterans and Minority groups tended to average slightly below 20 percent, while the Youth and "Other" categories somewhat higher. The pattern across groups within states tends to exhibit the same relative ratios, although within groups across states there appears to be substantial variation.

2. For the U.S. as a whole the average income per placement was around $800.00 in FY 1974, but somewhat higher for the "Other" (lowest BPF weight) category. The data for the ten regions disclose that higher than average income placements occurred in the industrial Northeast (Regions I and II) and Midwest (Region V) than in the rest of the U.S. -- probably reflecting inter-regional differences in wage rates and

TABLE 2: ES TRANSACTION AND INDIVIDUAL PLACEMENT DATA FOR MAJOR BALANCED PLACEMENT FORMULA PRIORITY GROUPS, BY STATE AND REGION, FY 1974

STATE	BPF (a) VETERANS				BPF (b-h) MINORITY ET AL				BPF (i) YOUTH				OTHER			
	Ref. Trans. / Service Trans.	Placement (Trans. / Indiv.)	Avg. Job Income / Placement Trans.	Avg. Plcmnt. Income / Indiv.	Ref. Trans. / Service Trans.	Placement (Trans. / Indiv.)	Avg. Job Income / Placement Trans.	Avg. Plcmnt. Income / Indiv.	Ref. Trans. / Service Trans.	Placement (Trans. / Indiv.)	Avg. Job Income / Placement Trans.	Avg. Plcmnt. Income / Indiv.	Ref. Trans. / Service Trans.	Placement (Trans. / Indiv.)	Avg. Job Income / Placement Trans.	Avg. Plcmnt! Income / Indiv.
Alabama	.23	1.34	889.19	1192.82	.15	1.32	613.43	811.73	.15	1.08	684.09	735.72	.22	1.33	807.63	1070.72
Alaska	.17	1.25	1570.87	1963.58	.16	1.38	1117.31	1540.29	.22	1.25	598.80	748.50	.19	1.24	1161.12	1442.61
Arizona	.21	1.85	519.61	963.63	.18	1.74	466.52	812.50	.28	1.18	552.97	654.12	.26	1.33	644.22	858.15
Arkansas	.27	3.25	296.85	965.93	.17	1.44	673.92	973.05	.27	2.12	435.63	924.60	.27	2.00	577.19	1154.39
California	.20	2.01	686.50	1378.49	.17	1.48	705.41	1042.40	.25	1.36	473.35	645.61	.24	1.50	609.92	914.54
Colorado	.18	2.86	373.04	1068.82	.14	1.66	521.57	865.89	.19	1.43	555.09	796.43	.19	1.80	523.71	941.00
Connecticut	.19	1.36	1163.75	1615.66	.17	1.25	910.71	1139.89	.23	1.31	739.85	967.50	.22	1.18	959.41	1131.62
Dist. Columbia	.22	3.86	374.93	1446.17	.15	1.70	818.53	1393.93	.13	1.33	620.75	827.67	.17	1.00	1190.00	1190.00
Florida	.22	1.47	993.17	1460.72	.19	1.53	731.29	1114.91	.28	1.42	848.92	1208.37	.27	1.37	937.18	1280.96
Georgia	.16	1.42	1003.90	1428.18	.11	1.29	733.86	947.54	.18	1.21	998.75	1210.61	.21	1.39	819.16	1139.07
Hawaii	.17	1.26	1046.66	1319.70	.16	1.19	805.93	961.11	.17	1.33	680.75	907.67	.16	1.36	893.47	1215.12
Idaho	.20	1.69	752.74	1271.62	.19	1.29	625.44	804.41	.21	1.25	512.27	642.37	.20	1.39	712.56	993.03
Illinois	.14	2.35	1017.87	2387.60	.10	1.55	1294.91	2012.09	.20	1.35	1131.30	1528.10	.20	1.61	737.82	1186.93
Indiana	.14	1.52	800.92	1218.24	.20	1.34	765.46	1026.07	.25	1.12	641.73	717.36	.23	1.20	1025.84	1226.24
Iowa	.23	2.32	565.77	1312.23	.18	1.43	664.76	949.29	.24	1.53	539.11	821.96	.24	1.39	880.48	1219.13
Kansas	.20	1.53	742.04	1136.89	.16	1.55	585.80	909.69	.22	1.61	464.72	746.00	.27	2.56	475.15	1218.11
Kentucky	.16	1.30	1016.35	1322.03	.11	1.25	715.16	893.50	.13	1.04	770.17	804.40	.15	1.21	914.09	1103.21
Maine	.17	1.24	857.18	1064.09	.14	1.27	831.09	1054.51	.20	1.20	662.17	794.60	.20	1.19	874.57	1043.35
Maryland	.12	1.31	1403.03	1832.19	.10	1.29	979.74	1261.10	.17	1.06	936.60	990.11	.16	1.24	1676.92	2075.19
Massachusetts	.14	1.49	1009.36	1503.18	.10	1.37	978.29	1335.32	.18	1.25	661.17	827.48	.15	1.27	1021.27	1293.14
Michigan	.17	1.29	1155.93	1483.40	.11	1.49	781.88	1163.61	.14	1.17	966.09	1130.53	.16	1.19	1017.18	1207.11
Minnesota	.18	1.65	767.12	1261.71	.14	1.33	713.69	950.92	.20	1.36	491.34	667.91	.21	1.34	802.77	1073.72
Mississippi	.18	1.40	768.79	1072.35	.13	1.43	658.93	940.11	.18	1.27	685.58	870.15	.19	1.28	844.36	1079.50
Missouri	.24	2.07	849.19	1345.72	.15	1.32	688.19	907.02	.23	1.39	641.06	753.37	.24	1.53	714.85	1091.39
Montana	.10	1.68	830.44	1393.95	.10	1.36	692.52	930.17	.16	1.00	447.17	806.67	.15	1.75	632.80	1109.11
Nebraska	.31	3.41	415.00	1412.96	.20	1.34	612.96	818.50	.26	1.44	562.23	806.67	.26	1.35	831.87	1124.48
New Hampshire	.18	1.46	1182.98	1723.77	.19	1.15	879.27	1009.53	.23	1.06	726.88	772.31	.21	1.26	1044.06	1311.14
New Jersey	.13	1.24	1217.78	1506.62	.11	1.76	797.85	1401.18	.15	1.09	833.98	905.00	.16	1.23	1033.64	1270.15
New York	.15	1.73	1838.41	3170.80	.14	2.48	912.25	2257.50	.18	1.29	2203.66	2840.01	.18	1.35	1634.73	2210.28
N. Carolina	.16	1.21	839.10	1079.19	.17	1.33	704.61	933.37	.21	1.11	747.36	830.40	.21	1.23	899.94	1104.05
N. Dakota	.26	2.62	563.72	1475.93	.23	1.45	640.80	929.17	.29	1.67	458.52	764.21	.32	1.47	778.46	1144.79
Ohio	.15	1.92	694.41	1329.54	.13	1.59	708.16	1125.11	.23	1.71	772.55	1319.40	.20	1.80	783.07	1412.98
Oklahoma	.20	3.00	294.66	1119.72	.17	2.37	466.24	1109.13	.20	1.60	502.66	805.55	.22	1.94	646.57	1254.46
Oregon	.17	1.05	561.68	1039.26	.14	1.45	657.37	954.06	.22	1.62	394.25	637.51	.20	1.50	731.21	1098.12
Pennsylvania	.16	1.35	1002.06	1349.66	.15	1.36	781.80	1065.60	.23	1.18	726.24	859.38	.20	1.23	954.47	1173.41

TABLE 2 (continued):

STATE	BPF (a) VETERANS				BPF (b-h) MINORITY ET AL				BPF (1) YOUTH				OTHER			
	Ref. Trans. / Service Trans.	Placement (Trans. / Indiv.)	Avg.Job Income / Placement Trans.	Avg. Plcmnt. Income / Indiv.	Ref. Trans. / Service Trans.	Placement (Trans. / Indiv.)	Avg. Job Income / Placement Trans.	Avg. Plcmnt. Income / Indiv.	Ref. Trans. / Service Trans.	Placement (Trans. / Indiv.)	Avg.Job Income / Placement Trans.	Avg. Plcmnt. Income / Indiv.	Ref. Trans. / Service Trans.	Placement (Trans. / Indiv.)	Avg.Job Income / Placement Trans.	Avg. Plcmnt. Income / Indiv.
S. Carolina	.24	1.24	743.44	922.24	.18	1.46	644.80	942.60	.27	1.23	736.27	908.07	.26	1.24	909.52	1126.07
S. Dakota	.29	4.47	269.85	1205.14	.15	1.29	680.03	876.13	.20	1.37	530.76	727.33	.28	1.45	616.04	893.69
Texas	.32	2.60	560.30	1458.96	.25	1.86	534.21	993.24	.27	1.41	705.25	996.60	.28	1.49	748.33	1113.53
Utah	.23	2.78	449.11	1248.62	.21	1.35	768.97	1034.71	.28	1.31	727.68	951.58	.31	1.32	837.50	1102.84
Vermont	.17	1.05	1015.25	1068.68	.17	1.24	898.70	1114.93	.26	1.39	444.83	615.92	.27	1.31	956.48	1255.38
Virginia	.21	1.75	819.69	1435.54	.15	1.33	751.07	1001.94	.16	1.15	814.74	916.58	.20	1.21	964.14	1165.54
Washington	.26	2.09	566.06	1180.82	.18	1.33	614.75	819.66	.23	1.37	381.60	521.52	.23	1.45	744.35	1082.26
W. Virginia	.15	1.34	907.25	1215.90	.12	1.21	655.69	795.17	.16	1.09	567.23	618.80	.16	1.17	930.86	1093.12
Wisconsin	.22	1.26	2769.97	3491.14	.21	1.26	2033.02	2555.20	.23	1.23	1521.80	1875.08	.25	1.25	2419.93	3034.94
Wyoming	.25	1.48	963.27	1421.21	.21	1.58	611.52	964.15	.22	1.38	562.27	773.13	.27	1.44	946.91	1358.61
Region 1	.16	1.40	1039.36	1455.66	.14	1.30	929.38	1205.23	.19	1.25	660.88	825.39	.17	1.25	996.64	1247.94
Region 2	.15	1.61	1725.84	2778.05	.13	2.25	884.91	1994.77	.18	1.25	1976.17	2472.35	.18	1.33	1552.43	2070.56
Region 3	.17	1.57	896.64	1411.46	.14	1.37	791.02	1086.48	.20	1.15	735.41	846.56	.19	1.21	1029.16	1249.43
Region 4	.19	1.37	929.84	1272.15	.15	1.38	689.20	949.93	.21	1.23	803.93	985.78	.22	1.30	886.78	1155.83
Region 5	.16	1.73	1056.62	1824.87	.13	1.45	1014.98	1466.98	.22	1.28	860.50	1103.41	.21	1.44	1028.38	1481.81
Region 6	.29	2.09	463.35	1337.58	.22	1.08	536.84	1009.12	.25	1.61	589.63	946.12	.27	1.68	686.39	1150.86
Region 7	.24	2.22	589.96	1310.74	.17	1.38	656.76	909.03	.24	1.48	532.24	789.14	.25	1.60	721.05	1156.02
Region 8	.20	2.75	453.88	1247.56	.17	1.45	645.94	937.73	.23	1.52	533.45	811.00	.24	1.58	672.58	1064.36
Region 9	.20	1.97	665.13	1310.83	.17	1.50	674.32	1012.43	.25	1.33	490.81	652.55	.24	1.46	622.41	908.31
Region 10	.21	1.85	660.33	1219.85	.16	1.37	671.68	921.54	.22	1.41	417.98	590.09	.21	1.46	750.15	1091.36
U.S.TOTAL	.19	1.93	778.34	1518.57	.16	1.54	746.74	1149.03	.22	1.35	710.22	960.98	.22	1.44	871.07	1250.67

Source: FY 1974 ESARS 2% Sample

industrial composition.

3. The most striking evidence corresponding to the relative placement weights is reflected in the "turnover" rate (Placement transactions per individual) - predominantly highest for veterans within each state.

These results suggest that a "core" of job-ready individuals are "mined" rather intensively within the two highest BPF weight categories. This aspect is also reflected in the income per placed individual (turnover rate times average income per transaction).

To summarize, it appears from Table 2 that a vast majority of applicants are never referred at all by the local ES offices. However, a "job-ready cadre" are placed frequently - for veterans in some states on the average as high as 3 - 4 times per year. Thus, it seems that the local offices do respond to relative incentives, especially at the higher payoff end of the BPF spectrum. Response at the lower end appears scattered and somewhat random.

4.0 CONCEPTUAL MODEL FOR FORMULATING "SOCIAL VALUE WEIGHTS"

The foregoing Section (2.0) has examined the structure of the Balanced Placement Formula and, although the conceptual basis underlying the BPF remains occult, the analysis of ESARS data in Section 3.0 suggests that the local ES office managers do respond to the placement group incentives of the Formula. This section sets forth a simple analytical model for deriving particular social value weights, assuming some illustrative distributive policy objectives.

The structural relationship involves a ratio calculation to derive the (policy) desired relative weights. Consider two different target groups, "1" and "2", with the average income (per worker, or alternatively, per family) denoted by Y_1 and Y_2 respectively. If the policy objective is to tend to equalize the average incomes of the two groups (1 and 2) then the multiplicative policy weights a_1 and a_2 can be derived as follows:

Let $a_1Y_1 = a_2Y_2$ (1.0)

and the desired relative weights a_1^* and a_2^* can be obtained as below:

$$\frac{a_1^*}{a_2^*} = \frac{Y_2}{Y_1} \qquad (2.0)$$

If, for example, Y_1 = \$4,000 and Y_2 = \$5,000, then

$$\frac{a_1^*}{a_2^*} = \frac{\$5,000}{\$4,000} = 1.25 \qquad (2.1)$$

That is, $a_1^* = 1.25a_2^*$ (2.2)

If $a_2^* = 1$, then $a_1^* = 1.25$; If $a_2^* = 3$, then $a_1^* = 3.75$. Substituting in (1), if $a_2^* = 1$, $a_1^* = 1.25$, Y_1 = \$4,000 and Y_2 = \$5,000, then $(a_1^*)(Y_1)$ = (1.25)(\$4,000) = \$5,000 and $(a_2^*)(Y_2)$ = (1)(\$5,000) = \$5,000. (2.3)

Similarly, if $a_2^* = 3$, $a_1^* = 3.75$, $Y_1 = \$4{,}000$ and $Y_2 = \$5{,}000$,

$$\text{then } (a_1^*)(Y_1) = (3.75)(\$4{,}000) = \$15{,}000 \tag{2.4}$$

$$\text{and } (a_2^*)(Y_2) = (3)(\$5{,}000) = \$15{,}000$$

Note that equation (1.0) is satisfied with both pairs of values for a_1^* and a_2^*. It is not the pure numerical value of a_1^*, which is important but the ratio of a_1^*/a_2^*. Thus, equally satisfactory values of a_1^* and a_2^* must only satisfy the relationship in (2.2). For example, other values could be the following, such as $a_1^* = 1.25a_2^*$:

a_1^*	a_2^*
8.75	7
2.50	2
23.75	19

The foregoing relative value weight derivation can be easily extended to more than two weighting factors through the same algebraic methodology. Suppose there is a third policy group (3) of interest. The desired value for a_3^* can be calculated by comparison to either a_1^* or a_2^*. If $Y_3 = \$8{,}000$, then

$$(a_3^*)(Y_3) = (a_1^*)(Y_1) \quad \text{and} \tag{2.5}$$

$$\frac{a_3^*}{a_1^*} = \frac{Y_1}{Y_3} = \frac{\$4{,}000}{\$8{,}000} = .5 \ , \tag{2.6}$$

if $a_3^* = .5a_1^*$, and if $a_1^* = 1.25$ as before, then $a_3^* = .625$

Alternatively, using $a_2^* = 1$, and $Y_2 = \$5{,}000$, then

$$\begin{aligned} (a_2^*)(Y_2) &= (a_3^*)(Y_3) \\ (1)(\$5{,}000) &= (a_3^*)(\$8{,}000) \\ a_3^* &= \frac{\$5{,}000}{\$8{,}000} = .625 \end{aligned} \tag{2.7}$$

Again, the ratic of $a_2^*:a_1^*$, $a_3^*:a_2^*$, and $a_3^*:a_1^*$ are the key relationships. In this case the desired weights would be in the ratios of (1.25, 1, .625) for a_1^*, a_2^*, a_3^* respectively.

Similarly, if the desired policy weights are intended to equalize employment rates (i.e., 1 - the group's unemployment rate, UR_i) the derivation of the equalizing relative weights (b_1^*, b_2^* and b_3^*) would be accomplished as above for the equalization of incomes. For example, if $UR_1 = .10$; $UR_2 = .07$; and $UR_3 = .04$, then

$$\frac{b_1^*}{b_2^*} = \frac{(1 - UR_2)}{(1 - UR_1)} = \frac{.93}{.9} = 1.033 \qquad (2.8)$$

and if $b_2^* = 1$, then

$$b_1^* = (1.033)(b_2^*) = 1.033$$

By solving for the relationships in terms of employment rates $(1 - UR_i)$, the incentives are such that $b_1^* > b_2^*$, just as $UR_1 = .10 > UR_2 = .07$. The value for b_3^* is calculated as before,

$$\frac{b_3^*}{b_2^*} = \frac{(1 - UR_2)}{(1 - UR_3)} = \frac{.93}{.96} = .969 \qquad (2.9)$$

Expected Income

One final dimension for possible social value weighting consideration is that of relative expected incomes for target groups. Expected income for a group is defined here to be the product of a group's employment rate (1 - the group's unemployment rate) times the group's average income:

$$E(Y_i) = (Y_i)(1 - UR_i) \qquad (2.10)$$

In terms of the illustrative values employed above:

Group	Average Income	Employment Rate	Expected Income
1	\$ 4,000	(.90)	\$ 3,600
2	5,000	(.93)	4,650
3	8,000	(.96)	7,680

The methodology for deriving relative (c_i^*) weights based upon a policy to equate expected incomes among groups is the same as demonstrated above for both pure money incomes and employment rates.

$$c_1^* \, E(Y_1) = C_2^* \, E(Y_2) \tag{2.11}$$

$$c_1^*(\$3{,}600) = C_2^*(\$4{,}650)$$

$$c_1^* = c_2^* \frac{(\$4{,}650)}{\$3{,}600} = 1.292c_2^*$$

If c_2^* is arbitrarily set equal to 1, then $c_1^* = 1.292$.

For c_3^*,

$$c_3^* \, E(Y_3) = c_2^* \, E(Y_2) \tag{2.12}$$

$$c_3^* \, (\$7{,}680) = c_2^* \, (\$4{,}650)$$

$$c_3^* = \frac{\$4{,}650}{\$7{,}680} = .605(c_2^*)$$

and if $c_2^* = 1$, then $c_3^* = .605$. Alternatively, if $c_1^* = 1.292$ as derived from (2.11), then

$$c_3^* \, E(Y_3) = c_1^* \, E(Y_1) \tag{2.13}$$

$$c_3^* \, (\$7{,}680) = (1.292)(\$3{,}600) = \$4{,}651.20 \quad \text{and}$$

$$c_3^* = \frac{\$4{,}651.20}{\$7{,}680.} = .605 \text{ to verify the above result.}$$

Thus, the relative (ratio-preserving) weights for c_1^*, c_2^*, and c_3^* would be 1.292, 1.0 and .605, respectively.

Normalized (Percentage) Weights

As emphasized above, the crucial aspect of the desired policy weights is the constant ratio relationship. Setting a numerical value for one weight then determines the values for the others, as long as ratio consistency is preserved. However, in order to compare the percentage distribution within a set of weights; e.g., c_1^*, c_2^*, c_3^*, or to compare the value of weights for a specific group (e.g., c_i^* with b_i^*) normalization to relative percentage terms provides the most straightforward method. For example, the implicit percentage impact for c_i^* can be calculated as follows:

c_{i*}	Relative Values	Percentage Calculation		Normalized Weights
c_1^*	1.292	1.292/2.897	=	.446
c_2^*	1.000	1.0 /2.897	=	.345
c_3^*	.605	.605/2.897	=	.209
	2.897	2.897/2.897		1.000

Similarly for a_1^*, from (2.6 and 2.7):

a_1^*	1.25	1.25 /2.875	=	.435
a_2^*	1.00	1.0 /2.875	=	.348
a_3^*	.625	.625/2.875	=	.217
	2.875	2.875/2.875		1.000

Thus, the normalized percentage weights to equate average incomes (Y_i) would be slightly different from those derived to equalize expected incomes:

$c_1^* > a_1^*$, $c_2^* = a_2^*$, and $c_3^* < a_3^*$.

The Balanced Placement Formula Normalized Weights

The FY 1976 version of the BPF weights can similarly be "normalized" in terms of the implicit percentage distributional factors:

BPF Category	Target Group	BPF Placement Weight	Percentage Calculation	Normalized Weights
(a)	Veterans	5	5/11	.454
(b-h)	Minority; Disadvantaged	3	3/11	.273
(i)	Youth	2	2/11	.182
	Other	1	1/11	.091
	TOTAL.....	11	11/11	1.000

5.0 ILLUSTRATIVE VALUE WEIGHT CALCULATIONS

This Section applies the methodology developed in the preceding one to the Balanced Placement Formula priority groupings, based upon some partial and extrapolated data. The following Table 3 shows the "actual" median income and unemployment rate factors utilized.

TABLE 3

MEDIAN FAMILY INCOME AND UNEMPLOYMENT RATES
(Adjusted to 1974)

BPF Category	Actual Demographic Group	Median Income(1)	Unemployment Rate(2)	Y(1-UR) Expected Income
Veterans	Veteran families	$ 15,685 (est)	5.1%	$ 14,885
Minorities	Non-White	8,265	9.9%	7,447
Youth	16-24 years	8,618	11.8%	7,601
Other	White	13,356	5.0%	12,688

Sources: (1) Current Population Reports, Consumer Income Series P-60, No. 101, Bureau of the Census, January 1976.

(2) Manpower Report of the President, April 1975.

Table 4 shows the derived ratio weights based on the three alternative hypothetical policy goals discussed above. All primary ratios are based on a reference value of 1 for the lowest BPF category ("Other", White).

TABLE 4

DERIVED WEIGHTS (PER PLACEMENT) FOR
ILLUSTRATIVE ALTERNATIVE ES POLICY GOALS

BPF Category	Equalize Median Family Incomes	Equalize Employment Rates	Equalize Expected Income	BPF Weights
Veterans	.852	1.02	.852	5
Minorities	1.618	1.98	1.704	3
Youth	1.550	2.36	1.669	2
Other	1.000	1.00	1.000	1

Table 5 below shows the relative weights of Table 4 transformed into "normalized" percentage distribution terms, for ease of comparison among the respective sets of weights.

TABLE 5

"NORMALIZED" PERCENTAGE DISTRIBUTION WEIGHTS

BPF Category	Equalize Median Family Incomes	Equalize Employment Rates	Equalize Expected Income	BPF Weights
Veterans	.170	.160	.163	.454
Minorities	.322	.311	.327	.273
Youth	.309	.372	.319	.182
Other	.199	.157	.191	.091
TOTAL.....	1.000	1.000	1.000	1.000

The normalized percentage weights shown above for the three hypothetical policy goals are all rather similar in percentage distribution terms among the target population groups. At the same time, the BPF weights are considerably different. This contrast is not intended to imply the BPF factors are "wrong" in any definitive sense, but they certainly are not consistent with any of the hypothetical policy-objective weights derived for equalizing median income, employment rates, or expected incomes among the target groups. However, it should be noted that the income and unemployment rate data used for the target groups represent the population generally. A possible variant would be to derive the desired policy weights based on the same factors for the respective subsets of the target groups who are ES users. (This information should be readily retrievable from the ESARS 2% sample file.)

6.0 SUMMARY

This paper has briefly explored the theoretical and policy underpinnings for deriving "social value weights" for aggregating the diverse output values of ES activities. The principal focus here has been on the redistributive aspects of the labor exchange function. One important issue which still remains to be addressed at some later time is the appropriate relative social values for ES labor exchange vis-a-vis enforcement activities.

The structure of the Balanced Placement Formula (BPF) incentives has been reviewed. Among the problems we have highlighted is that the BPF is used for evaluating past performance of state agencies and as well, for budgeting future Title III funding allocations. Further, as an evaluation tool, the BPF focuses entirely on labor exchange activities and ignores the social values generated by ES enforcement outputs. As suggested in Section 2.0, this omission in the BPF may result in somewhat counterproductive incentives for operational level managers, since enforcement activities appear to have substantial partial returns to ES reserves.

Further, the BPF dichotomizes the evaluation of Quantitative Factors from the Qualitative ones. And even within that latter portion of the BPF, the wage level and job duration dimensions are considered independently of the "target" groups. Finally, one external aspect of "social costs" may have been distorted in the BPF as presently structured.

Two significant studies published in recent years in the Journal of Political Economy (JPE) indicate that there is a distinct positive correlation between the incidence of crime among young people and the unemployment of youth. The first study, by Belton Fleisher, on "The Effect of Unemployment on Juvenile Delinquency" (JPE, December 1963) was based primarily on regression analysis applied to data for Boston, Chicago, and Cincinnati for the years 1932-1961. These regressions reveal significant positive correlation between male unemployment in the age brackets 14-19 and 20-24, and arrests for crimes against property (burglary, larceny, auto theft and robbery).

In the second study, "Crime, Youth and the Labor Market" (JPE, May/June 1972), L. Phillips, H. L. Botey, and D. Maxwell used national data to estimate equations for 18 to 19 year old males for the period 1953-1967. These equations reveal a very close correlation between increases in crimes against property by this age group and decreases in their employment rates. The estimated equations were also good predictors of burglary, robbery and auto theft rates for 1968, 1969 and 1970. Therefore, ES job placement for the "youth" group can have potentially large external (social benefit) effects. In the Balanced Placement Formula, the relative weight for placements of this group is 2 (versus 5 for veterans, and 3 for migrants, minorities, et al). The articles cited above suggest that the BPF weight for "youth" might be too low relative to other priority groups. A comprehensive social cost-social benefit perspective would be required to explore perhaps more appropriate incentives for local ES placement attention and effort.

Our differences with the BPF's structure notwithstanding, it does appear that the local ES managers do respond to such incentives. The evidence presented in Section 3.0 suggests the following:

1. The average referral to transaction ratio is about .20 for all major BPF categories.

2. The average income per placement transaction is around $800 for all categories.

3. However, the intensity of "placement action" (transactions per individual) is persistently higher in the upper weight categories, most notably veterans. The data seem to lead to the conclusion that a "core" of job-ready applicants are "mined" rather intensively (in almost all states) in the highest BPF weight categories.

Finally, in Section 4.0 we have presented and numerically illustrated the derivation of policy weights, assuming three alternative redistribution policies. These were the equalization of income among groups, the equalization of employment rates, and the equalization of expected incomes. For all three alternatives, the partial evidence presented in Section 5.0 indicated that the relative "normalized" weights would not differ appreciably. However, the present BPF weights bear little resemblance to the weights estimated to achieve those income redistributional goals.